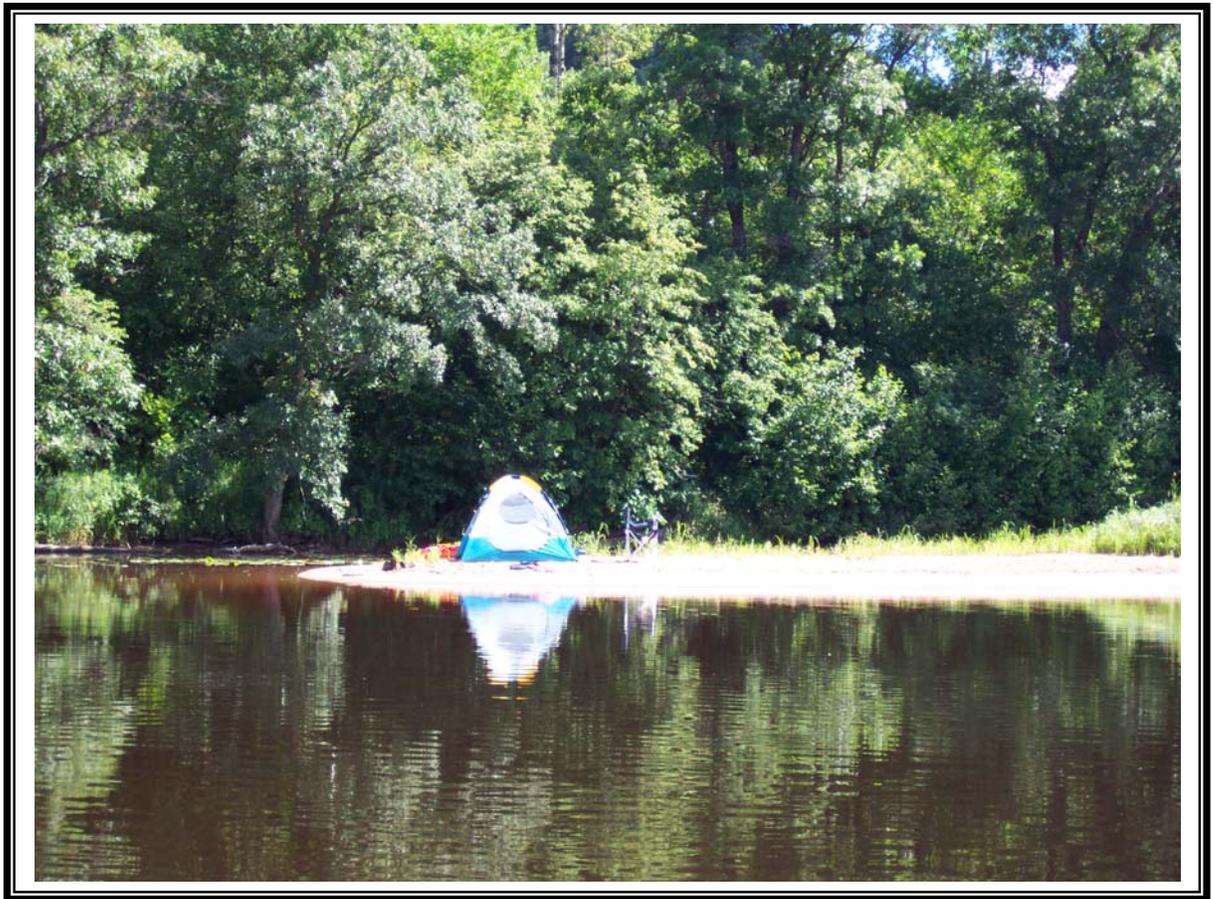


Camping Management Plan and Environmental Assessment

Lower St. Croix

National Scenic Riverway



Wisconsin - Minnesota
February 2007



Recommended:

Superintendent, St. Croix National Scenic Riverway

Date

Approved:

Director, Midwest Region, National Park Service

Date

TABLE OF CONTENTS

Camping Management Plan and Environmental Assessmenti
EXECUTIVE SUMMARYi
1.0 PURPOSE AND NEED1
2.0 BACKGROUND5
 2.1 Project Background and Scope5
 2.2 Relationship to Other Actions and Plans.....5
 2.4 Applicable Areas / Excluded Areas6
 2.5 Applicable Laws, Treaties, Policy and Guidance6
 2.6 Issues and Impact Topics.....9
3.0 ALTERNATIVES11
 Actions Common to All Alternatives11
 3.1 Alternative 1 (No Action Alternative)12
 3.2a Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass13
 3.2b Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Permits and/or Reservations)17
 3.3a Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass18
 3.3b Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System.....20
 3.4a Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass21
 3.4b Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System23
 3.5 Alternatives Considered but Dismissed24
 3.6 Agency Preferred Alternative24
 3.7 Environmentally Preferred Alternative26
 3.8 Comparison of Alternatives27
 3.9 Comparison of Effects of Alternatives27
 TABLE 1: COMPARISON OF ALTERNATIVES.....29
 TABLE 2: SUMMARY OF ENVIRONMENTAL CONSEQUENCES31
4.0 AFFECTED ENVIRONMENT37
 Impact Topics Selected for Analysis37
 Impact Topics Eliminated from Further Analysis39
 4.1 Recreation / Visitor User and Experience40
 4.2 Park Neighbors42
 4.3 Public Health and Safety43
 4.4 Vegetation43
 4.5 Soils44
 4.6 Water Quality45
 4.7 Floodplains46
 4.8 Native Animals46
 4.9 Threatened and Endangered Species.....47
 4.10 Archeological Resources.....49
 4.11 Ethnography50
 4.12 Scenic Resources50
5.0 ENVIRONMENTAL CONSEQUENCES52
 5.1 Recreation / Visitor Use and Experience53
 5.2 Park Neighbors63
 5.3 Public Health69
 5.4 Vegetation73
 5.5 Soils80
 5.6 Water Quality85

5.7 Floodplains	90
5.8 Native Animals	95
5.9 Threatened and Endangered Species	101
5.10 Archeological Resources	107
5.11 Ethnography.....	112
5.12 Scenic Values.....	119
6.0 REFERENCES	127
7.0 CONSULTATION AND COORDINATION / PREPARERS.....	131
7.1 Consultation and Coordination.....	131
7.2 Preparers.....	131
APPENDIX A-1: MAPS OF ALTERNATIVE 1: NO ACTION.....	133
APPENDIX A-2: MAPS OF ALTERNATIVE 2a / 2b: DESIGNATED CAMPSITES, BACKWATER CAMPING ZONES, OVERNIGHT BOAT TIE-UPS	139
APPENDIX A-3: MAP OF ALTERNATIVE 3a / 3b: DESIGNATED CAMPSITES, DESIGNATED BACKWATER CAMPSITES, OVERNIGHT BOAT TIE-UPS	145
APPENDIX A-4: MAPS OF ALTERNATIVE 4a / 4b: DESIGNATED CAMPSITES ABOVE ARCOLA SANDBAR, OVERNIGHT BOAT TIE-UPS.....	151
APPENDIX B: ROUGH COST ESTIMATES FOR ALTERNATIVES (in 2007 dollars) *.....	157
APPENDIX C: LISTED SPECIES OF THE ST. CROIX NATIONAL SCENIC RIVERWAY	159
APPENDIX D: FLOODPLAIN STATEMENT OF FINDINGS.....	163
APPENDIX E: CROSS REFERENCE OF COMMON AND SCIENTIFIC NAMES FOR PLANTS AND ANIMALS	166

FIGURES:

Figure 1: Vicinity Map – Lower St. Croix Riverway	page 2
Figure 2: Photos of Some Camping Related Issues	page 3
Figure 3: Photos of Some of the Areas Proposed for Individual Designated Campsites	page 16
Figure 4: Examples of Carry-in, Carry-out Toilets	page 17

TABLES:

Table 1: Comparison of Alternatives	page 29
Table 2: Summary of Environmental Consequences	page 31
Table 3: Recreational User Survey Results	page 41
Table 4: Recorded Range of Camping Demand	page 42
Table 5: Residential Property Owner Survey	page 43
Table 6: Comparison – Number of Proposed Campsites vs. Range of Camping Demand	page 57

EXECUTIVE SUMMARY

The National Park Service (NPS) is considering changing the way camping is managed in the Federally-administered portion of the Lower St. Croix National Scenic Riverway (Riverway). Camping is currently managed by three types of “zones;” closed zones, open zones, and islands only zones. In the closed zones, camping is not allowed along the Riverway except in campgrounds within the State Parks. In open zones, camping is allowed anywhere on NPS-owned land. In islands only zones, camping is allowed on islands only. There are no group size limits and areas suitable for camping are available on a first-come, first serve basis.

This plan addresses a number of unacceptable camping related issues on the Lower Riverway, including improper disposal of human body waste (feces), vegetation trampling, denuded areas and subsequent island and shoreline erosion, and conflicts between campers and private landowners who own shoreline property. These issues were identified in the Cooperative Management Plan for the Lower Riverway, which calls for the development of a camping management plan to address concerns.

Alternatives

This Camping Management Plan / Environmental Assessment present several alternatives for managing camping. It also provides an analysis of the environmental impacts of each alternative for use in the decision-making process. In general, these alternatives range from least intensive management (Alternative 1: No Action) to most intensive management (Alternative 4b).

Alternative 1: No Action (no change). Represents the baseline conditions against which to compare the impacts of the action alternatives;

Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass;

Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System;

Alternative 3a: Designated Campsites, Designated Backwater Campsites (by reservation only), Overnight Boat Tie-ups, Overnight Use Pass;

Alternative 3b: Designated Campsites, Designated Backwater Campsites, Permit / Reservation System, Overnight Boat Tie-ups;

Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass; and

Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System.

Table 1: Comparison of Alternatives provides a summary description of each alternative. Additional detail is provided in Chapter 3. Maps of each alternative are found in Appendix A. Rough cost estimates for each alternative are included in Appendix B. Actions common to all the action alternatives include establishing group size limits and requiring carry-in, carry-out or onboard toilets for all campers and for all overnight boat tie-ups.

Agency Preferred Alternative

The NPS preferred alternative is Alternative 3a: Designated Campsites, Designated Backwater Campsites (by reservation only), Overnight Boat Tie-ups, Overnight Use Pass. The preferred alternative is not a final agency decision; rather it is an indication of the NPS preference at this time. The NPS believes that this alternative best meets the goals of the camping management plan, while allowing for a diversity of recreational experiences. It would also be relatively easy to implement. Alternative 3a meets the goals of the Camping Management Plan in the following ways:

1. Reduces the impact of human waste by:
 - requiring overnight users to use carry-in, carry-out toilets or onboard facilities on self-contained boats;
 - requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose (including the need for carry-in, carry-out toilets).

2. Reduces the trampling and loss of vegetation by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters;
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - establishing group size limits for all overnight users;
 - requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose.

3. Reduces shoreline and island erosion by:
 - reducing the trampling of vegetation caused by overnight use (using the same strategies listed under number 2)

4. Protects and enhances natural resource conditions by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters;
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - establishing group size limits for all overnight users;

- requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose.
5. Protects cultural resources by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters. All locations proposed for designated campsites would be cleared for impacts to archeological resources before construction. Ethnographic resources would be protected by protecting natural and cultural resources.
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose.
 6. Reduce user conflicts by:
 - reducing the length of stay from 7 consecutive nights to 3 consecutive nights;
 - providing means for tent campers, backwater paddlers and self-contained boaters to enjoy the Riverway;
 - requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose.
 7. Protect the rights of private landowners by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters. Locations for designated campsites were selected, in part, to minimize impacts to private landowners along the Riverway.
 - establishing group size limits for all overnight users;
 - requiring all overnight users to possess an overnight use pass with information on all applicable Riverway regulations and their purpose.

Alternative 3a also provides for a diversity of recreational experiences along the Riverway. It provides:

moderate opportunities for solitude for overnight users in the “Moderate Recreation Area” (as defined by the CMP) along the main channel from Arcola sandbar downstream to the north city limits of Stillwater;
 high opportunities for solitude during off peak times (night time and weekdays) in the “Quiet Waters Area” along the main channel from Taylors Falls/St. Croix Falls to Arcola sandbar; and
 a sense of a remote, backwater setting and an opportunity for peace, quiet, and solitude in “the Natural Waters Area” in the backwaters north of Stillwater to Franconia.

Alternative 3a would also be relatively easy to implement and to enforce, given adequate funding. Campsite construction would begin the first year of implementation. The overnight use pass would be available free-of-charge at the NPS Visitor’s Center in St. Croix Falls. It may also be available via the mail and possibly through the Riverway

website. Only one pass would be needed annually, but persons would need to be in possession of it whenever staying overnight on the Riverway. Reservations and awareness courses for the small number of backwater sites (5) could be handled by Riverway staff at the Visitor Center in St. Croix Falls.

Enforcement would be straight-forward. All overnight users would be accountable to adhering to the rules and regulations spelled out in overnight use pass, which must be in their possession. Enforcement would be by education, observation, warnings, and ticketing as necessary. An end of the season review would determine whether Alternative 3a is working or whether it is necessary to move to Alternative 3b (a permit or reservation system).

Impacts

The most noteworthy areas of impact include the negative impacts of Alternative 1: No Action on vegetation, soils, scenic resources, park neighbors, and the type of recreational experience the National Scenic Riverway is intended to provide. In localized areas, some of these impacts are major and long-term. The action alternatives would reduce the intensity of the impacts and confine them to short-term. The impacts of each alternative are summarized in Table 2: Summary of Environmental Consequences. Additional detail is provided in Chapter 5.

Next steps

Following public and agency review of this document, and consideration of comments received, the NPS will reach a decision on which alternative to implement. The decision is expected by early Spring 2007.

Proposed Implementation Schedule

It will not be possible to implement the changes proposed by the preferred alternative in one year. The NPS goal for 2007 is to establish designated campsites on the Interstate to Osceola stretch of river *and* to do outreach and education to let people know that specific regulations (camping in designated sites only, group size limits, overnight use pass, etc.) will go in to effect on the Interstate to Osceola stretch of river 2008. In 2008, the NPS would establish designated campsites on the Osceola to Log House stretch of river *and* do outreach and education to let people know that the regulations will go into effect on that stretch of river in 2009. Enforcement of the regulations on the Interstate to Osceola stretch will also go into effect in 2008. The NPS will work its way down river until the plan is fully implemented in the Federally-administered zone. Thus, it may take up to 4 years to fully implement the plan. If the NPS is able to establish designated campsites more quickly than anticipated, the schedule may be stepped up. The public will be kept informed of the progress of the implementation schedule and what to expect from year to year.

1.0 PURPOSE AND NEED

A Cooperative Management Plan (CMP) for the Lower St. Croix National Scenic Riverway (Lower Riverway) was completed in 2001. The purpose of the CMP is to guide management of the Lower Riverway over the next 15 to 20 years (NPS, 2001). The CMP was prepared by the National Park Service (NPS), Wisconsin Department of Natural Resources, and Minnesota Department of Natural Resources with considerable public involvement. The CMP identified the effects of recreational use on islands and other natural resources as a planning issue and concern and directed the NPS to prepare a comprehensive camping management plan for the Federally-administered section of the Lower Riverway.

The Federally-administered section of the Lower Riverway is the 27 miles from the hydroelectric dam at St. Croix Falls/Taylor's Falls down to the north city limits of Stillwater (Figure 1). Chisago and Washington counties, Minnesota, and Polk and St. Croix counties, Wisconsin, border the Federally-administered section. The NPS currently manages camping on this section of river outside the State Parks through established "camping zones." The zones are 1) zones where camping is not allowed, 2) zones where open camping is allowed anywhere on NPS lands, and 3) zones where camping is allowed only on islands.

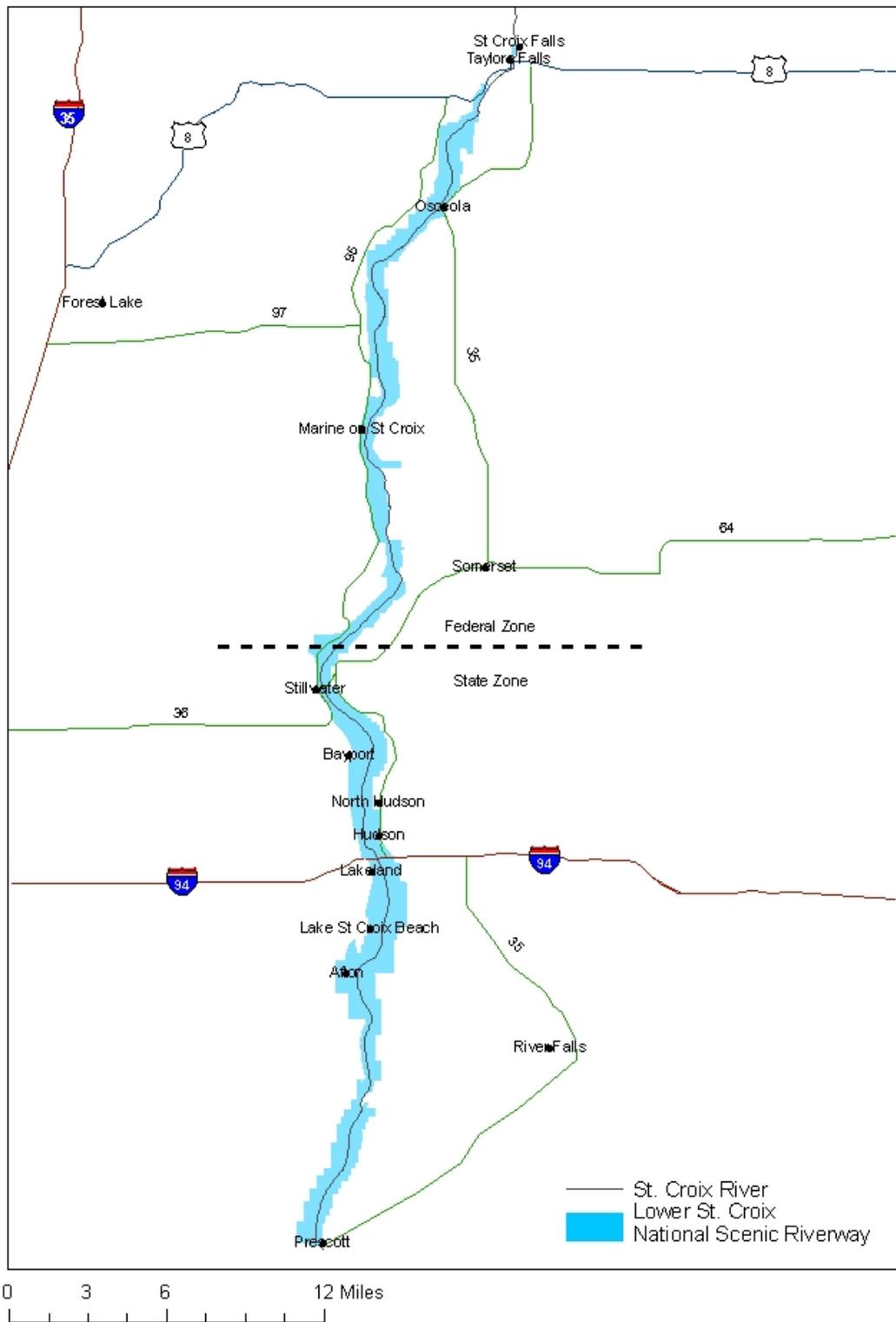
A number of unacceptable conditions related to camping use exist, including human body waste and toilet paper left strewn about on islands and shorelines; vegetation trampling, denuded areas, and erosion of islands and shorelines; damage to natural and cultural resources; conflicts between campers; and conflicts between campers and private landowners who own shoreline property. Figure 2 depicts some of these issues.

The Lower Riverway lies within rapidly growing areas of Minnesota and Wisconsin. Washington County, Minnesota, lies within the Seven-County Twin Cities Metropolitan Area, as defined by the Metropolitan Council. Chisago County in Minnesota and Polk, St. Croix and Pierce counties in Wisconsin are all "ring" counties adjacent to the Seven-County Metropolitan Area. The population of Washington County, Minnesota, is projected to increase by 70% between 2000 and 2030 (Metropolitan Council, 2004). St. Croix County is the most rapidly growing county in Wisconsin, with a population projected to increase by 68% between 2000 and 2030. Polk County is also projected to increase by more than 25% during the same time period (Wisconsin Department of Administration, 2004).

It is unknown whether the projected increase in population in the counties that border the Lower Riverway will result in increased recreational pressure. A study on outdoor recreation use by the Minnesota Department of Natural Resources provides some indication (Kelly, 2005). This study indicates that, in general, outdoor recreation use is decreasing per-capita, but since population is increasing, total recreational use is currently at a plateau. However, camping as a specific recreational use is projected to increase during the 10-year period from 2001-2014. It is, therefore, reasonable to expect that increased population in the area will result in at least some increased camping pressure on the Lower Riverway. The issues related to camping will not resolve themselves and would be expected to worsen with



Figure 1: Vicinity



increased population and increased recreational pressure.

Guidance from the Cooperative Management Plan

According to the CMP, the camping management plan is to address the following goals:

- reduce the impact of human waste;
- reduce the trampling and loss of vegetation;
- reduce shoreline and island erosion;
- protect and enhance natural resource conditions;
- protect cultural resources;
- reduce user conflicts; and
- protect the rights of private landowners.



Human body waste and toilet paper on island in river



Erosion at Pillar Island below the Arcola Sandbar

Figure 2: Camping Related Issues

The CMP established “Water Management Zones” to guide management of the Lower Riverway. The “Water Management Zones” are as follows:

Moderate Recreation Waters - main channel from Arcola Sandbar to north Stillwater; to be managed to have moderate numbers of people and provide moderate opportunities for solitude.

Quiet Waters - main channel from Taylors Falls/St. Croix Falls to Arcola Sandbar; during peak times, to be managed for high numbers of people and to provide low opportunities for solitude; during off-peak times, to be managed for low numbers of people and to provide high opportunities for solitude.

Natural Waters - backwaters north of Stillwater; to be managed for low numbers of people and to provide high opportunities for solitude.

The purposes of this camping management plan are to develop strategies to meet the goals set by the CMP and to provide camping experiences consistent with the established Water Management Zones. This document presents alternative management strategies to meet these purposes and provides an analysis of their potential environmental impact. It also serves as a conduit for informing the public and soliciting their input in this decision-making process. In short, the document provides information needed by the NPS to make a sound management decision regarding camping use at the Lower Riverway.

2.0 BACKGROUND

2.1 Project Background and Scope

In 1972, Congress added the Lower St. Croix National Scenic Riverway (Lower Riverway) to the National Wild and Scenic Rivers System. It is a narrow corridor that runs for 52 miles along the boundary of Minnesota and Wisconsin, from St. Croix Falls/Taylors Falls to the confluence with the Mississippi at Prescott/Point Douglas (Figure 1). It borders the counties of Chisago and Washington in Minnesota and Polk, St. Croix and Pierce counties in Wisconsin. A mix of public and private land is within the boundary.

The NPS manages the upper 27 miles of lands and waters from St. Croix Falls/Taylors Falls to north Stillwater (referred to as the Federally-administered zone) under both fee simple ownership or as conservation, riverfront, and scenic easement. There are 10 access points (public landings) along the 27 miles. The law requires that the lower 25 miles of the Lower Riverway (referred to as the state-administered zone) be administered by the states of Minnesota and Wisconsin.

A number of municipalities are located within the boundary of the Federally-administered zone, including Taylors Falls, Franconia, Copas, Marine on St. Croix, and Stillwater on the Minnesota side and St. Croix Falls, Osceola, and Houghton on the Wisconsin side. In addition to the public land managed by the NPS, other types of publicly-owned lands are found along the corridor. They include Interstate State Park and William O'Brien State Park in Minnesota and Interstate State Park and the St. Croix Islands Wildlife Area in Wisconsin. Locally administered areas exist as well.

Congress established the Lower Riverway to:

- preserve the protect (and restore and enhance where appropriate) for present and future generations the Lower Riverway's ecological integrity, its natural and scenic resources, and its significant cultural resources;
- accommodate a diverse range of recreational opportunities that do not detract from the exceptional natural, cultural, scenic, and aesthetic resources;
- provide an environment that allows an opportunity for peace and solitude; and
- provide an opportunity for education and study of the geologic, cultural, ecological, and aesthetic values to further enhance stewardship of the river (NPS, 2001).

2.2 Relationship to Other Actions and Plans

Proposed actions that are related to this plan, but outside its scope, include implementing the following boat speed limits as described in the CMP (NPS, 2001):

20 mph, all times, Stillwater to Arcola sandbar, main channel;

15 mph, all times, Arcola sandbar to St. Croix Falls/Taylors Falls, main channel;
Slow no wake in back channels, backwaters and sloughs;
Slow no wake within 100 feet of all shoreline, including islands;
Slow no wake within 100 feet of all swimmers; and
Slow no wake within 100 feet of all non-motorized watercraft.

Other related actions include putting floating toilets back out on the Federally-administered section. A pontoon equipped with a set of toilets was in place on the river near the Soo Line High Bridge. However, the hulls of the floating toilets deteriorated to the point that they had to be removed from the river. Funding is being sought to replace the floating toilets to provide the level of service that visitors had become accustomed to. However, human waste (feces) being left on islands and shorelines was a problem before the floating toilets were removed. Their proposed replacement does not eliminate the need to address human waste concerns in this plan.

2.4 Applicable Areas / Excluded Areas

Regardless of the alternative ultimately selected, the camping management plan **will apply only** to NPS fee-owned lands within the Federally-administered portion of the Riverway, upstream of Stillwater, Minnesota. It will **not apply** to private property, property where the NPS has purchased only a scenic easement, or other public lands within the boundary.

It also will **not apply** to the State-administered portion of the Lower Riverway from Stillwater to Prescott. The CMP provides guidance for camping in the State-administered section of the Lower Riverway. It states that south of Stillwater overnight use of the Hudson Islands will continue to be minimally regulated. Camping in the two state parks and one regional park in the area will continue to be allowed only in designated areas.

2.5 Applicable Laws, Treaties, Policy and Guidance

2.5.1 National Environmental Policy Act

This environmental assessment (EA) has been prepared to evaluate the impacts of the alternatives described in Section 3.0. It is prepared in accordance with the *National Park Service's Director's Order No. 12: Conservation Planning, Environmental Impact Analysis, and Decision Making*, and its accompanying Handbook, and the provisions of the National Environmental Policy Act of 1969 (NEPA)(Public Law 91-190, 42 U.S.C. 4321-4247). The procedures for developing this document comply with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR 1500-1508).

2.5.2 The Wild and Scenic Rivers Act

The Lower St. Croix National Scenic Riverway was established under the Wild and Scenic Rivers Act (Act) (Public Law 90-542). The Act was passed in 1968 in response to concern over the loss of our nation's free-flowing rivers to development. The purpose of designating a river under the Act is expressed in Section 1(b) of the Act:

It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.

The Lower St. Croix National Scenic Riverway was created in 1972 by an amendment to the Act.

2.5.3 The National Park Service Organic Act (Impairment)

The NPS Organic Act of 1916 created the NPS and defined the agency's mission. It states that the NPS "shall promote and regulate the use of Federal areas known as national parks, monuments, and reservations...by such means and measures as conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations" 16 USC 1). The General Authorities Act of 1970 supplemented these provisions by clarifying that the provisions of the Organic Act apply to all areas included in the National Park System and that "the authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 USC 1a(1)).

While Congress has given the NPS management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirements of the NPS Organic Act of 1916 and the NPS General Authorities of 1970 which prohibit the impairment of park resources and values. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; that is key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or that is identified as a goal in the park's general management plan or other relevant NPS planning documents.

The Lower Riverway is an area of the National Park System established to protect and enhance its free-flowing character, water quality and outstanding scenic, recreational, and geologic values for current and future generations. Impairment is analyzed in this EA for each alternative, including no-action, for each impact topic. For each alternative and impact topic, the EA examines the question of whether the impact would be serious enough to impair park resources or values.

2.5.4 The 1837 Treaty with the Chippewa

Also applicable to this plan is the 1837 treaty with the Chippewa. In the 1837 Treaty, the Chippewa ceded lands to the U.S. government, but retained rights to hunt, fish, and gather on these lands. Eight Chippewa bands, the Mille Lacs, Fond du Lac, St. Croix, Bad River, Lac du Flambeau, Lac Court Oreilles, Sokagon, and Red Cliff, have had off-reservation treaty rights reaffirmed within the Riverway. The ceded territory includes lands along the St. Croix River north (upstream) of Cedar Bend (river mile 41).

As stated in the NPS *Management Policies*, the NPS will honor its legal responsibilities to American Indian tribes as required by the Constitution of the United States, treaties, statutes, and court decisions. The formal legal rationale for the relationship between the NPS and tribes is augmented by the historical, cultural, and spiritual relationships that American Indian tribes have with park lands and resources. As the ancestral homelands of many tribes, the parks protect resources, sites, and vistas that are highly significant for the tribes.

Within the constraints of legal authority and its duty to protect park resources, the NPS will work with tribal governments to provide access to park resources and places that are essential for the continuation of traditional American Indian cultural or religious practices. Therefore, if an alternative is selected which requires a fee for camping (an advance allocation system such as overnight permits or campsite reservations) the fee would be waived for tribal members exercising treaty rights within the ceded territory.

2.5.5 Other Regulatory Requirements

Other regulatory requirements which are applicable to the activities addressed in this EA include:

- Executive Order 11988, "Floodplain Management;"
- Section 7 consultation with the U.S. Fish and Wildlife Service under the Endangered Species Act; and
- Section 106 of the National Historic Preservation Act addressing any activities directly or indirectly impacting prehistoric or historic archeological sites, historic structures, or cultural landscapes eligible for or listed on the National Register of Historic Places (also includes coordination with any Native American Tribes in regard to ethnographic resources as appropriate).

2.6 Issues and Impact Topics

Issues related to camping on the Lower Riverway were identified during development of the Cooperative Management Plan and expanded on during internal and external scoping for this camping management plan. Internal and external scoping involved NPS staff, management partners, and the general public.

Initial public scoping was conducted from Fall 2003 through Spring 2004. Over 400 copies of Newsletter 1 were distributed seeking public input to identify camping related issues and potential solutions. In addition, public meetings were held in Taylors Falls, Minnesota, and Stillwater, Minnesota, in December 2003. Issues identified included the following:

- Lack of toilet facilities on the Lower Riverway for both day users and campers and inappropriate disposal of human waste (feces).

- Litter from both day users and campers including cans, glass bottles, plastic bottles, plastic bags, used toilet paper, paper plates, plastic eating utensils, cigarette butts, and dirty diapers.

- Camping in areas that have been closed to either reduce conflicts with private landowners or to protect sensitive resources.

- Conflicts between private landowners and campers including noisy parties, trespass, and campers using private property as a toilet.

- Campers monopolizing prime locations, staying well beyond the existing 7-day stay limit.

- Island and shoreline erosion from recreational use, flooding, strong currents, and boat wakes.

- Cutting of live trees, damage to wildlife habitat, and lack of respect for wildlife.

- A need for more visitor contact, law enforcement, and maintenance staff to provide information and education, enforce rules and regulations, and maintain campsites.

- Concern that additional regulations and permitting will take the fun and spontaneity out of camping on the Lower Riverway.

In addition to the initial public scoping efforts, preliminary alternatives were presented to the public in Fall 2005. Newsletter 2, which presented the preliminary alternatives, was sent out to a mailing list which included over 100 people. It was also posted on the Riverway website and in the NPS Planning, Environment, and Public Comment (PEPC) system. Press releases were issued and a public meeting was held at William O'Brien State Park in Marine on St. Croix, Minnesota, to present information and take comments.

Based on the results of scoping, the following impact topics will be considered in the environmental analysis:

- Recreation / Visitor Use and Experience
- Park Neighbors
- Public health
- Soils
- Water quality

Vegetation
Floodplains
Wildlife
Threatened and Endangered Species
Archeological Resources
Ethnography
Scenic Resources

3.0 ALTERNATIVES

Several alternatives for managing camping are being considered and are described below. Alternative 1: No Action (no change) is included to represent baseline conditions against which to compare the impacts of the action alternatives.

Actions Common to All Alternatives

Under all alternatives, the existing regulations related to visitor use would continue to apply. These regulations are updated and published annually in the Superintendent's compendium. A complete, up-to-date list can be accessed at <http://www.nps.gov/sacn/parkmgmt/lawsandpolicies.htm>.

As of the 2006 recreation season, the regulations most applicable to camping activities include the following:

Firewood: Dead and down wood, including driftwood may be collected for personal use by visitors as campfire fuel along and in shore areas. However, firewood may not be gathered from any island.

Cutting live or dead standing trees is prohibited except by written agreement of the Superintendent under the terms of a use and occupancy lease, residing-in-the-park special use permit, or scenic, riverfront or conservation easement.

Campfires: Campfires are permitted at designated campsites only and must be contained in the provided fire ring. Cook-fires are permitted in designated picnic areas and must be contained in the provided grills, or in a portable grill or stove brought to the park by an individual. Constructing a rock-ring, or lighting a fire in a rock-ring, is prohibited. No fire shall be left unattended. All campfires and cook-fires will be out and cold before any site is permanently vacated or simply left for the day.

Noise: Excessive loudness is prohibited. Audio devices may be operated in conformance with 36 CFR 2.12(a) (1) (generally 60 decibels or less measured at 50 feet - the level of conversational speech); audio devices may not be operated during quiet hours, 10:00 p.m. - 6:00 a.m. Chain saws, portable motors, generators or similar devices may not be used.

Glass Beverage Containers: Glass beverage containers are prohibited on lands and waters within the Riverway.

Temporary Closures: Temporary closures of areas for a variety of reasons including site restoration, protection of at-risk endangered or threatened animal and plant species, and protection of fragile cultural and historic sites may occur on an as needed basis.

Trash: Leaving of refuse in the park is prohibited. Refuse will be removed from the Riverway by Riverway users in accordance with the NPS carry-in, carry-out policy.

Pets: Pets are allowed as long as they have a collar with an identification tag, are vaccinated, have valid vaccination tags, and are on a leash no longer than six feet in length.

Pet Excrement Control: Persons in the park must promptly dispose of all pet excrement. Excrement must be gathered up and removed from the Riverway, or buried at least six inches underground and 100 feet from any trail, campsite, building, picnic area, landing, or water source.

Waste from Boats: Dumping of human waste into any water source is prohibited. All human waste from boats must be disposed of at an approved marina waste dump station.

Check-out time: All campsites must be vacated by noon following the last night's stay.

3.1 Alternative 1 (No Action Alternative)

Camping Locations: No change from the current way of managing camping would take place. Camping would continue to be managed according to three different types of "camping zones." The zones consist of 1) zones where camping is not allowed, 2) zones where open camping is allowed anywhere on NPS land, and 3) zones where camping is only allowed on islands (see maps in Appendix A-1).

Zones where camping is not allowed are as follows:

From 1,200 feet south of Franconia Landing, Minnesota upstream to St. Croix Falls/Taylor's Falls, including all islands and shoreline areas on both sides of the river, except at designated campsites at Minnesota and Wisconsin Interstate State Parks.

From 1,200 feet north and south of the Highway 243 Bridge at Osceola Landing, including the Osceola Picnic Area and all islands.

Between Dead Man's Slough, Wisconsin upstream to the southern tip of Greenburg Island at William O'Brien State Park, including all islands. This zone corresponds roughly to the area opposite and along the south to north city limits of Marine on St. Croix, Minnesota.

The closed zones were established in an effort to minimize conflicts between campers and private landowners and prevent camping from occurring outside of designated campsites at the State Parks. Most of the zones have been in place since the Lower Riverway was established in 1972. The exception is the closed zone across from Marine on St. Croix, which was closed in 1997 to reduce conflicts with private landowners.

Camping is allowed on islands only from the Soo Line High Bridge to the north city limits of Stillwater.

In all other sections of the Federally-administered zone, camping is allowed anywhere on NPS-owned land.

An inventory of locations showing evidence of camping was conducted in Fall 2002 and Spring 2003. Eighty spots were found along the Federally-administered section that had disturbance consistent with camping activities (fire scars, evidence of access along bank). These sites were distributed throughout the Lower Riverway in the open camping, closed camping, and island only camping zones. The 80 spots indicate the extent of campsite use rather than total number of campsites occupied at one given time.

Overnight Boat Tie-ups: There are no restrictions on overnight tie-ups.

Campsite Access: Access to areas used for camping is currently by land (walk-in) or water (boat-in).

NPS Toilet and other Facilities: The NPS provides toilet facilities in a few camping locations on the Lower Riverway. There is a concrete vault toilet at Eagle's Nest, a NPS boat-in campground at river mile 48.5; a pit toilet on Swing Bridge Island at River Mile 41; and 5 plastic vault toilets with surrounds on Mile Long Island at river mile 25.5. Eagle's Nest also includes water and 7 designated campsites with fire rings. Where toilets are not available, human waste must be buried at least 6 inches deep and a minimum of 100 feet from any water source, high water mark, trail or other developed facility. Other toilets are provided in the State Parks and at day use areas such as Osceola Landing and Picnic Area.

Group Size Limits: There are no group size limits.

Length-of-Stay: The maximum length of stay is seven (7) consecutive nights and 30 nights for the season (from May 15 to September 15).

Allocation System: Areas suitable for camping are available on a first-come, first-serve basis.

Adaptive Management Strategies: Areas are sometimes closed to camping in an attempt to protect resources or reduce conflicts with neighbors. However, the closures are not always effective.

3.2a Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Similarities: This alternative would include all measures listed above under the heading "Actions Common to All."

Differences: This alternative would establish designated campsites in many traditionally-used areas along the main channel, require that tent campers on the main channel stay in designated campsites, establish “backwater camping zones,” and require that all overnight users be in possession of an overnight use pass.

Camping Locations:

Designated Campsites - Under this alternative, camping in the Federally-administered portion of the Lower Riverway would be managed by establishing designated campsites and allowing camping in these designated sites.

Approximately 45 designated campsites would be established along the 27 miles of the Federally-administered section. Campsites would be rotated out as necessary for rest and restoration, so the total number available at any one time would vary. See the maps in Appendix A-2 for the locations of the proposed designated campsites. The locations were selected according to the following criteria: 1) on NPS land; 2) easily accessed by boat/canoe; 3) sufficient flat area for tents; and 4) minimizes disruption to park neighbors. Most locations have been traditionally-used for camping. Examples of some of the traditionally-used areas that would be converted to designated campsites are shown in Figure 3.

Backwater Zones - Designated campsites would not be established in the backwaters. Visitors would choose their own location to camp on NPS-owned land in backwater zones. These zones are defined as follows 1) backwaters from across from Franconia to Osceola, Wisconsin side; 2) backwaters from Osceola to Cedar Bend, Minnesota side; 3) backwaters from Cedar Bend to William O’Brien, Wisconsin side; and 4) backwaters from south of Marine to north Stillwater (see maps in Appendix A). Campers could choose to camp in any spot on NPS land in the backwaters, but must be out-of-sight of other campers. To be eligible to camp in the backwater zones, persons must complete an awareness course and possess a backwater camping pass as described below.

Overnight Boat Tie-ups: Self-contained boats would be able to tie up anywhere on NPS-owned land. However, there would be certain other restrictions. No tie-ups would be allowed at designated campsites that are already occupied, a maximum of two boats could tie up together, boat tie-ups must maintain a distance of 100 feet in all directions from other tie-ups and designated campsites, and no fires or picnic tables would be allowed. The most likely stretch of river for boat tie-ups is below Arcola sandbar. Water depths here allow for larger self-contained boats such as houseboats and cabin cruisers.

Campsite Access: Campsite access would be by water only. No walk-in camping would be allowed.

Toilet and other Facilities: All overnight users would be required to bring their own carry-in, carry-out toilets or use onboard facilities on self-contained boats. There are several types of commercially available portable toilets as shown in Figure 4. Facilities at the designated campsites would include a sign and fire ring. Toilets, fire rings, and water would remain at

Eagle's Nest. No facilities would be provided in the backwater camping zones and no fires would be allowed. Backwater zone campers would need to bring a camping stove for cooking purposes.

Group Size Limits: Group size limits would be established to allow for up to 8 people at the individual designated campsites. Group campsites would allow for 9-16 people. Larger groups would need to split up or make arrangements to camp in one of the State Parks. The 6 clustered individual sites already established at Eagle's Nest (an NPS boat-in campground) would accommodate 8 per site or up to a total of 48 people.

Up to 2 self-contained boats could tie up together for overnight stays.

In the backwater zones, 6 people and 2 boats would be allowed per group.

Length-of-Stay: The length-of-stay at designated campsites would be 3 consecutive nights and 30 nights for the season (from May 15 to Sept 15). Length-of-stay in the backwater zones would be 1 night and 12 nights for the season. The length-of-stay for overnight tie-ups would also be 3 consecutive nights in one location and 30 nights for the season (from May 15 to Sept 15).

Overnight Use Pass: Designated campsites and backwater zone camping would be available on a first-come, first-serve basis. However, all campers in the designated campsites as well as overnight boat tie-ups must possess an "overnight use pass." The purpose of the pass would be to ensure that overnight users are informed about all related regulations. The pass would be available free-of-charge at the NPS Visitor's Center in St. Croix Falls. It may also be available via the mail and possibly through the Riverway website. Only one pass would be needed annually, but persons would need to be in possession of it whenever camping. To be eligible to camp in the backwater zones, persons must complete an awareness course with an NPS ranger and possess a special backwater overnight use pass. The awareness course would cover low impact camping techniques. All overnight users, whether on the main channel or the backwaters, would need to post their pass in a location clearly visible from the water.

Adaptive Management Strategies: If overnight boat tie-up restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie-ups would be established.

The condition of campsites would be monitored on a regular basis. Parameters assessed at each campsite would include the percent of vegetative ground cover, percent of exposed soil, and root exposure (as an indicator of erosion). Measures to address impacts to campsites would include installing steps to protect the riverbank and temporarily closing campsites to allow for rest and restoration.

In the backwater zones, areas would be carefully watched. If the same areas are used repeatedly, vegetation is lost, and bare soil covers 6-25% of the area, a permit system for camping would be triggered.

If camping occurs outside of designated campsites as shown by an end-of- season evaluation, the NPS would adopt an advance allocation system, as described in Alternative 2b.



Potential Campsite at River Mile 43.0



Potential Campsite at River Mile 48.3



Potential Campsite at River Mile 33.7

Figure 3: Some of the areas proposed for designated individual campsites



Figure 4: Examples of carry-in, carry-out toilets

3.2b Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Permits and/or Reservations)

Similarities: Alternative 2b would be identical to Alternative 2a with respect to designated campsites, backwater zones, overnight boat tie-ups, campsite access, toilet and other facilities, group size limits, and length-of- stay.

Differences: The only difference between Alternative 2a and Alternative 2b would be that, in order to manage demand for campsites and space in the backwater zones, overnight permits or campsite reservations would be required in advance of each camping trip. A brief description is given below.

Permit or Reservation System: Under Alternative 2b, **overnight permits and / or campsite reservations** would be issued to allocate campsites in advance of a trip. A decision about which demand management system would be used, overnight permits, reservations or some combination of the two would be made by the NPS after further study and consultation.

The permit or reservation system would likely be internet-based through a contractor selected by the NPS. They could also be requested by phone. The NPS would set fees based on similar camping experiences in the area and, if possible, to return ~20% to the Riverway to support the camping program. As of 2007, the typical cost for a similar camping experience was \$12-\$15.

Overnight permits would allow the bearer to camp in any available designated campsite within a requested reach of the river. The reaches would be defined as follows:

Interstate State Park Landing to Osceola Landing, 6.5 river miles and 12 individual sites;
Osceola Landing to Log House Landing, 6.5 river miles, 5 individual and 2 group sites,
Log House Landing to Arcola Sandbar, 8.5 river miles and 4 individual sites;
Arcola Sandbar to north Stillwater, 5.5 river miles and 22 sites.

Campsite reservations would allow the bearer to camp in a specifically requested (as available) campsite. Campsites would be identified on maps by river mile number.

Overnight permits would be issued for camping in the backwater zones. The breakdown would be as follows:

Backwater Zone 1 – 3 groups per night
Backwater Zone 2 – 2 groups per night
Backwater Zone 3 – 1 groups per night
Backwater Zone 4 – 1 group per night
Backwater Zone 5 – 2 groups per night
Backwater Zone 6 – 2 groups per night

Campers would post their permit or reservation in a location clearly visible from the water. Enforcement would be by spot checks by NPS ranger staff.

3.3a Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Similarities: Alternative 3a is identical to Alternative 2a with respect to designated campsites, overnight boat tie-ups, campsite access, toilet and other facilities, group size limits, length-of- stay, and the overnight use pass.

Differences: The only difference between Alternative 3a and Alternative 2a would be that instead of establishing “backwater camping zones,” a small number of designated backwater campsites would be established in the Federally-administered zone. Reservations would be required for these backwater sites. More detail about the alternative is given below.

Camping Locations:

Designated Campsites - Camping in the Federally-administered portion of the Lower Riverway would be managed by establishing designated campsites and allowing camping in designated campsites only. Approximately 45 designated campsites, primarily along the main channel, would be established along the 27 miles of the Federally-administered zone. Campsites would be rotated out as necessary for rest and restoration, so the total number available at any one time would vary. The

locations of the proposed designated campsites are shown on the maps in Appendix A-3. The locations for designated campsites were selected according to the following criteria 1) on NPS land; 2) easily accessed by boat/canoe; 3) sufficient flat area for tents; and 4) minimize disruption to park neighbors. Most locations have been traditionally-used for camping.

Designated Backwater Campsites – In addition, 5 designated campsites would be established in the backwaters (see maps in Appendix A-3). These campsites would be signed, but have no other facilities. Reservations would be necessary for backwater campsites. To be eligible to reserve a backwater campsite, persons must complete an awareness course.

Overnight Boat Tie-ups: Self-contained boats would be able to tie up anywhere on NPS-owned land. However, there would be certain other restrictions. No tie-ups would be allowed at designated campsites that are already occupied, a maximum of two boats could tie up together, boat tie-ups must maintain a distance of 100 feet in all directions from other tie-ups and designated campsites, and no fires or picnic tables would be allowed. The most likely stretch of river for boat tie-ups is below Arcola sandbar. Water depths here allow for larger self-contained boats such as houseboats and cabin cruisers.

Campsite Access: Campsite access would be by water only. No walk-in camping would be allowed.

Toilet and other Facilities: All camping parties would be required to bring their own carry-in, carry-out toilets. There are several types of commercially available portable toilets as shown in Figure 4. Facilities at the designated campsites would include a sign and fire ring. Toilets, fire rings, and water would remain at Eagle's Nest. Signs would be provided at the backwater campsites. No fire-ring would be provided and no fires would be allowed in the backwaters. Backwater campers would need to bring a camping stove for cooking purposes.

Group Size Limits: Group size limits would be established to allow for up to 8 people at the individual designated campsites. Group campsites would allow for 9-16 people. Larger groups would need to split up or make arrangements to camp in one of the State Parks. The 6 clustered individual sites already established at Eagle's Nest (an NPS boat-in campground) would accommodate 8 per site or up to a total of 48 people.

In the designated backwater campsites, 6 people and 2 boats would be allowed per group.

Length-of-Stay: The length-of-stay at designated campsites on the main channel would be 3 consecutive nights and 30 nights for the season (from May 15 to Sept 15). Length-of-stay in the backwater campsites would be 1 night and 12 nights for the season. The length-of-stay for overnight tie-ups would also be 3 consecutive nights in one location and 30 nights for the season (from May 15 to Sept 15).

Overnight Use Pass / Backwater Campsite Reservations: Designated campsites on the main channel would be available on a first-come, first-serve basis. However, all overnight users in the designated campsites and overnight boat tie-ups must possess an “overnight use pass.” The purpose of the pass would be to ensure that overnight users are informed about all related regulations. The pass would be available free-of-charge at the NPS Visitor’s Center in St. Croix Falls. It may also be available via the mail and possibly through the Riverway website. Only one pass would be needed annually, but persons would need to be in possession of it whenever camping.

Camping in the designated backwater campsites would be by reservation only. To be eligible to reserve a backwater campsite, persons must complete an awareness course. Reservations for the limited number of backwater campsites (5) would be made through NPS staff at the Riverway. A backwater campsite reservation would be required in advance of each backwater camping trip. There would be no charge.

Campers would post their overnight use pass or backwater campsite reservation in a location clearly visible from the water. Enforcement would be by spot checks by NPS ranger staff.

Adaptive Management Strategies: If overnight boat tie-up restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie-ups would be established.

The condition of campsites would be monitored on a regular basis. Parameters assessed at each campsite would include the percent of vegetative ground cover, percent of exposed soil, and root exposure (as an indicator of erosion). Measures to address impacts to campsites would include installing steps to protect the riverbank and temporarily closing campsites to allow for rest and restoration.

If camping occurs outside of designated campsites as shown by an end-of- season evaluation, the NPS would move to Alternative 3b as described below.

3.3b Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Similarities: Alternative 3b would be identical to Alternative 3a with respect to designated campsites, designated backwater campsites, overnight boat tie-ups, campsite access, toilet and other facilities, group size limits, and length-of-stay.

Differences: The only difference between Alternative 3b and Alternative 3a would be that, in order to manage demand for main channel as well as backwater campsites, overnight permits or campsite reservations would be required in advance of each camping trip. A brief description is given below.

Permit / Reservation System: Under Alternative 3b, **overnight permits and / or campsite reservations** would be issued to allocate main-channel campsites in advance of a trip. A decision about which demand management system would be used, overnight permits,

reservations or some combination of the two would be made by the NPS after further study and consultation. The permit or reservation system would likely be internet-based through a contractor selected by the NPS. They could also be requested by phone. The NPS would set fees based on similar camping experiences in the area and, if possible, to return ~20% to the Riverway to support the camping program. As of 2007, the typical cost for a similar camping experience was \$12-\$15.

Overnight permits would allow the bearer to camp in any available designated campsite within the requested reach of the river. The reaches would be defined as follows:

Interstate State Park Landing to Osceola Landing, 6.5 river miles and 12 individual sites;
Osceola Landing to Log House Landing, 6.5 river miles, 5 individual and 2 group sites,
Log House Landing to Arcola Sandbar, 8.5 river miles and 4 individual sites;
Arcola Sandbar to north Stillwater, 5.5 river miles and 22 sites.

Campsite reservations would allow the bearer to camp in a specifically requested (as available) campsite. Campsites would be identified on maps by river mile number.

Reservations would continue to be taken for the 5 designated backwater campsites. It is likely that they would also be taken through the contractor selected by the NPS and that a charge would be involved.

Campers would post their permit or reservation slip in a location clearly visible from the water. Enforcement would be by spot checks by NPS ranger staff.

3.4a Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Similarities: Alternative 4a is identical to Alternative 2a with respect to *designated main channel campsites upstream of Arcola sandbar*, overnight boat tie-ups, campsite access, toilet and other facilities, length-of- stay, and the overnight use pass.

Differences: The major difference between Alternative 4a and Alternative 2a would be that *only overnight boat tie-ups would be allowed below Arcola sandbar (no tent camping)*. Other differences include no backwater camping and smaller group size limits. More detail about the alternative is given below.

Camping Locations:

Designated Campsites - Under this alternative, camping in the Federally-administered portion of the Lower Riverway would be managed by establishing designated campsites above Arcola sandbar and allowing camping in these designated campsites only. Approximately 23 designated campsites, primarily along the main channel, would be established along 22 river miles. Campsites would be rotated out as necessary for rest and restoration, so the total number available at any

one time would vary. The locations of the proposed designated campsites are shown in Appendix A-4. The locations for designated campsites were selected according to the following criteria: 1) on NPS land; 2) easily accessed by boat/canoe; 3) sufficient flat area for tents; and 4) minimizes disruption to park neighbors. Most locations have been traditionally-used for camping.

Overnight Boat Tie-ups: Self-contained boats would be able to tie-up anywhere on NPS-owned land. However, there would be certain other restrictions. No tie-ups would be allowed at designated campsites that are already occupied, a maximum of two boats could tie-up together, boat tie-ups must maintain a distance of 100 feet in all directions from other tie-ups and designated campsites, and no fires or picnic tables would be allowed. The most likely stretch of river for boat tie-ups is below Arcola sandbar. Water depths here allow for larger self-contained boats such as houseboats and cabin cruisers.

Campsite Access: Campsite access would be by water only. No walk-in camping would be allowed.

Toilet and other Facilities: All camping parties would be required to bring their own carry-in, carry-out toilets. There are several types of commercially available portable toilets as shown in Figure 4. Facilities at the designated campsites would include a sign and fire ring. Toilets, fire rings, and water would remain at Eagle's Nest.

Group Size Limits: Group size limits would be established to allow for up to 6 people at the individual designated campsites. Group campsites would allow for 7-12 people. Larger groups would need to split up or make arrangements to camp in one of the State Parks. The 6 clustered individual sites already established at Eagle's Nest (an NPS boat-in campground) would accommodate 6 per site or up to a total of 36 people.

Length-of-Stay: The length of stay at designated campsites on the main channel would be 3 consecutive nights and 30 nights for the season (from May 15 to Sept 15). The length of stay for overnight tie-ups would also be 3 consecutive nights in one location and 30 nights for the season (from May 15 to Sept 15).

Overnight Use Pass: Designated campsites on the main channel would be available on a first-come, first-serve basis. However, all overnight users, whether in designated campsites or overnight boat tie-ups must possess an "overnight use pass" which would inform them of the rules and regulations governing camping and other recreational activities at the Riverway. The pass would be available free-of-charge from the NPS Riverway website. Overnight users would need to print a copy of their overnight use pass. Overnight use passes would also be available at the visitor center in St. Croix Falls. Overnight users would post their overnight use pass in a location clearly visible from the water. Enforcement would be by spot checks by NPS ranger staff.

Adaptive Management Strategies: If overnight boat tie-up restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie-ups would be established.

The condition of campsites would be monitored on a regular basis. Parameters assessed at each campsite would include the percent of vegetative ground cover, percent of exposed soil, and root exposure (as an indicator of erosion). Measures to address impacts to campsites would include installing steps to protect the riverbank and temporarily closing campsites to allow for rest and restoration.

If camping occurs outside of designated campsites as shown by an end-of- season evaluation, the NPS would move to Alternative 4b, as described below.

3.4b Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Similarities: Alternative 4b would be identical to Alternative 4a with respect to *designated main channel campsites upstream of Arcola sandbar*, overnight boat tie-ups, campsite access, toilet and other facilities, group size limits, and length-of- stay.

Differences: The only difference between Alternative 4b and Alternative 4a would be that, in order to manage demand for campsites, overnight permits or campsite reservations would be required in advance of each camping trip. A brief description is given below.

Permit / Reservation System: Under Alternative 3b, **overnight permits and / or campsite reservations** would be issued to allocate main-channel campsites in advance of a trip. A decision about which demand management system would be used, overnight permits, reservations or some combination of the two would be made by the NPS after further study and consultation. The permit or reservation system would likely be internet-based through a contractor selected by the NPS. They could also be requested by phone. The NPS would set fees based on similar camping experiences in the area and, if possible, to return ~20% to the Riverway to support the camping program. As of 2007, the typical cost for a similar camping experience was \$12-\$15.

Overnight permits would allow the bearer to camp in any available designated campsite within the requested reach of the river. The reaches would be defined as follows:

Interstate State Park Landing to Osceola Landing, 6.5 river miles and 12 individual sites;
Osceola Landing to Log House Landing, 6.5 river miles, 5 individual and 2 group sites,
Log House Landing to Arcola Sandbar, 8.5 river miles and 4 individual sites:

Campsite reservations would allow the bearer to camp in a specifically requested (as available) campsite. Campsites would be identified on maps by river mile number.

Campers would post their permit or reservation in a location clearly visible from the water. Enforcement would be by spot checks by NPS ranger staff.

3.5 Alternatives Considered but Dismissed

An alternative that would allow camping anywhere on NPS land as long as campers brought their own carry-in, carry-out toilet was considered but not carried forward for analysis. This would be a minor change from the existing camping management by zones (Alternative 1: No Action). While this alternative may help address the human waste issues, it would not address the other goals of the plan such as reducing the trampling and loss of vegetation; reducing shoreline and island erosion; protecting and enhancing natural resource conditions; protecting cultural resources; reducing user conflicts; and protecting the rights of private landowners.

In addition, a preliminary alternative that would establish designated campsites upstream of Arcola sandbar with a sign, fire ring *and* pit toilets was presented to the public in Fall 2005. This alternative was rather limiting because the NPS could only propose to establish designated campsites where a pit toilet could be placed 100 feet from the water or more (36 CFR, § 2.14, 9). This precluded establishing designated campsites in some traditionally-used areas. Furthermore, though campsites upstream of Arcola sandbar do not flood as frequently as those downstream, all proposed designated sites are still all within the 100-year floodplain and flood periodically, if not annually. This preliminary alternative was refined to require carry-in, carry-out toilets for all campers on the Federally-administered portion of the Lower Riverway. The refined alternatives, as presented in this document, have less impact on water quality and public health than the preliminary alternatives. They also allow the NPS to consider additional spots for designated campsites, having less impact on recreation. Because of the availability of refined alternatives with less impact, the preliminary alternative which would have provided pit toilets is not carried forward for analysis.

A preliminary alternative that would have eliminated overnight camping on NPS land on the Lower Riverway was also under consideration. This alternative was dropped due to its potential for significant impacts to recreation use. Also, this alternative is inconsistent with direction from the existing Cooperative Management Plan which calls for camping in designated campsites, and when demand exceeds supply, a permit or reservation system.

3.6 Agency Preferred Alternative

The NPS has selected Alternative 3a: Designated Campsites, Designated Backwater Campsites (by reservation only), Overnight Boat Tie-ups, Overnight Use Pass as the agency preferred alternative. The NPS believes that this alternative best meets the goals of the camping management plan, while allowing for a diversity of recreational experiences and being relatively easy to implement, with adequate funding.

Alternative 3a meets the goals of the Camping Management Plan in the following ways:

1. Reduces the impact of human waste by:
 - requiring overnight users to use carry-in, carry-out toilets or onboard facilities on self-contained boats;
 - requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose (including the need for carry-in, carry-out toilets).
2. Reduces the trampling and loss of vegetation by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters;
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - establishing group size limits for all overnight users;
 - requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose.
3. Reduces shoreline and island erosion by:
 - reducing the trampling of vegetation caused by overnight use (using the same strategies listed under number 2).
4. Protects and enhances natural resource conditions by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters;
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - establishing group size limits for all overnight users;
 - requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose.
5. Protects cultural resources by:
 - requiring tent camping in designated campsites, whether on the main channel or in the backwaters. All proposed locations for designated campsites would be cleared for impacts to archeological resources before construction. Ethnographic resources would be protected by protecting natural and archeological resources.
 - placing shoreline use restrictions (no tents, fires, etc) on overnight boat tie-ups;
 - requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose.
6. Reduce user conflicts by:
 - reducing the length of stay from 7 consecutive nights to 3 consecutive nights
 - providing means for tent campers, backwater paddlers and self-contained boaters to enjoy the Riverway;

- requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose.
7. Protect the rights of private landowners by:
- requiring tent camping in designated campsites, whether on the main channel or in the backwaters. Locations for designated campsites were selected, in part, to minimize impacts to private landowners along the Riverway.
 - establishing group size limits for all overnight users;
 - requiring all overnight users to possess an annual overnight use pass with information on all applicable Riverway regulations and their purpose.

Alternative 3a also provides for a diversity of recreational experiences along the Riverway. It provides

moderate opportunities for solitude for overnight users in the “Moderate Recreation Area” (as defined by the CMP) along the main channel from Arcola sandbar downstream to the north city limits of Stillwater;
 high opportunities for solitude during off peak times (night time and weekdays) in the “Quiet Waters Area” along the main channel from Taylors Falls/St. Croix Falls to Arcola sandbar; and
 a sense of a remote, backwater setting and an opportunity for peace, quiet, and solitude in “the Natural Waters Area” in the backwaters north of Stillwater to Franconia.

Alternative 3a would also be relatively easy to implement and to enforce given adequate funding. Campsite construction would begin the first year of implementation. The overnight use pass would be available free-of-charge at the NPS Visitor’s Center in St. Croix Falls. It may also be available via the mail and possibly through the Riverway website. Only one pass would be needed annually, but persons would need to be in possession of it whenever camping. Reservations and awareness courses for the small number of backwater sites (5) could be handled by Riverway staff at the visitor center in St. Croix Falls.

Enforcement would be straight-forward. All overnight users would be accountable to adhering to the rules and regulations spelled out in the overnight use pass, which must be in their possession. Enforcement would be by education, observation, warnings and ticketing as necessary. An end of the season review would determine whether Alternative 3a is working or whether it is necessary to move to Alternative 3b (an advance allocation system).

3.7 Environmentally Preferred Alternative

The environmentally preferred alternative is the alternative that will promote the national environmental policy expressed in the National Environmental Policy Act (NEPA) Section 101(b). This includes alternatives that meet the following criteria:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our natural heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieve a balance between population and resources that will permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Simply put “this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.

The NPS believes that all action alternatives meet the six criteria outlined in NEPA. However, Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Tie-ups, Permit / Reservation System would best protect resources. Alternative 4b would eliminate tent camping below Arcola sandbar and allow smaller group sizes than the other alternatives. It would also manage demand for designated campsites immediately upon implementation so that it would not exceed supply. By doing so, Alternative 4b would maximize opportunities for restoration of eroded areas. Therefore, the NPS has identified Alternative 4b as the environmentally-preferred alternative.

3.8 Comparison of Alternatives

Table 1 provides a summary description of the alternatives under consideration.

3.9 Comparison of Effects of Alternatives

Table 2 provides a summary comparison of the environmental impacts of the alternatives under consideration. Additional detail, including the methodology used to predict impacts and the definitions of impact intensity, type and duration, is given in Chapter 5.

TABLE 1: COMPARISON OF ALTERNATIVES

	Alternative 1 (No Action): Open Camping Zones, Island Only Zones, Closed Zones	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Camping Locations	Open camping on NPS land in “open camping” and “island camping only” zones (see Appendix A-1).	Main channel camping in designated campsites (see Appendix A-2). Backwater camping on NPS land in “Backwater Zones” (Zones = backwaters from Franconia to Osceola, WI side, 3 groups; backwaters from Osceola to Cedar bend, MN side, 2 groups; backwaters from Cedar Bend to Swing Bridge, 2 groups; backwaters from Swing Bridge to Log House, WI side, 1 group; backwaters from Arcola Sandbar to Soo Line High Bridge, WI side, 2 groups; backwaters from Soo Line High Bridge to rivermile 27.5, MN side, 2 groups (see Appendix A-2). Backwater groups must be out-of-sight of one another.	Same as 2a	Main channel camping in designated campsites (see Appendix A-3). Backwater camping in designated backwater campsites (by reservation only) (see Appendix A-3).	Same as 3a	<u>Above Arcola Sandbar:</u> Camping in designated main channel campsites. <u>Below Arcola Sandbar:</u> No tent camping. (see Appendix A-4)	Same as 4a
Overnight Tie-ups for Self-contained Boats (those with on-board sleeping, dining and toilet facilities)	No restrictions.	No tie-ups at designated campsites that are already occupied. Maximum of two boats may tie-up together. Must maintain a distance of 100 feet in all directions from designated campsites. No fires, tents or picnic tables. Camp stoves, charcoal grills, and lawn chairs allowed. Stay limit 3 consecutive nights, 30 nights for the season.	Same as 2a	Same as 2a	Same as 2a	Same as 2a	Same as 2a
Campsite Access	Water or Land Access	Water Access Only	Water Access Only	Water Access Only	Water Access Only	Water Access Only	Water Access Only
Toilet and other Facilities	Toilets, water, and fire rings at Eagle’s Nest and toilets on Mile Long Island. Where toilets not available, bury human waste at least 6 inches under ground and a minimum of 100 feet from any water source, high water mark, trail or other developed facility.	<i>Designated Main Channel Campsites:</i> Sign, fire ring, must bring carry-in carry-out toilets or use on-board facilities on self-contained boats. Toilets, water, and fire rings remain at Eagle’s Nest. <i>Backwater Zone Camping:</i> No facilities, no fires (camp stoves only), must bring carry-in, carry-out toilets.	Same as 2a	<i>Designated Main Channel Campsites:</i> Sign, fire ring, must bring carry-in carry-out toilets or use on-board facilities on self-contained boats. Toilets, water, and fire rings remain at Eagle’s Nest. <i>Designated Backwater Campsites:</i> Sign, no other facilities, no fires (camp stoves only), must bring carry-in, carry-out toilets.	Same as 3a	<i>Designated Main Channel Campsites:</i> Sign, fire ring, must bring carry-in carry-out toilets or use on-board facilities on self-contained boats. Toilets, water, and fire rings remain at Eagle’s Nest.	Same as 4a
Group Size Limits	No group size limits	<i>Individual sites:</i> 8 people <i>Group Sites:</i> 9-16 people <i>Backwater Zone Camping:</i> 6 people, 2 boats	Same as 2a	<i>Individual sites:</i> 8 people <i>Group Sites:</i> 9-16 people <i>Backwater Campsites:</i> 6 people and 2 boats	Same as 3a	<i>Individual sites:</i> 6 people <i>Group Sites:</i> 7-12 people	Same as 4a

	Alternative 1 (No Action): Open Camping Zones, Island Only Zones, Closed Zones	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Length-of-Stay	7 consecutive nights, 30 nights for season	<i>Designated Campsites:</i> 3 consecutive nights, 30 nights for season <i>Backwater Zones:</i> 1 night, 12 nights for season <i>Overnight Boat Tie-ups:</i> 3 nights, 30 nights for season	Same as 2a	<i>Designated Main Channel Campsites:</i> 3 consecutive nights, 30 nights for season <i>Backwater Campsites:</i> 1 night, 12 nights for season <i>Overnight Boat Tie-ups:</i> 3 consecutive nights, 30 nights for season	Same as 3a	<i>Designated Main Channel Campsites:</i> 3 consecutive nights, 30 nights for season <i>Overnight Boat Tie-ups:</i> 3 consecutive nights, 30 nights for season	Same as 4a
Allocation System	First-come, First-serve	First-come, First-serve. Campers in designated campsites and overnight boat tie-ups must be in possession of an annual overnight use pass which informs them of Riverway regulations. Backwater zone campers must complete an awareness course to be eligible for an annual backwater camping pass.	Overnight permits or campsite reservation system. ¹	First-come, First-serve for main channel designated campsites. Campers in designated main channel campsites and overnight boat tie-ups must be in possession of an annual overnight use pass which informs them of Riverway regulations. Reservations for backwater campsites. Backwater campers must complete an awareness course to be eligible to reserve backwater campsites.	Overnight permits or campsite reservation system. ¹	First-come, First-serve. Campers in designated campsites and overnight boat tie-ups must be in possession of an annual overnight use pass which informs them of Riverway regulations.	Overnight permits or campsite reservation system. ¹
Adaptive Management Strategy	Closures to protect resources, restore areas, or minimize impacts on park neighbors are used, but with limited effectiveness.	<u>Monitoring:</u> <i>Overnight Tie-ups:</i> If overnight boat tie-up restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie- ups would be established. <i>Backwater Camping Zones:</i> If same areas are used repeatedly, vegetation is lost and exposed soil = 6- 25% of site, a permit system for backwater zone camping is triggered. <i>Designated Campsites:</i> If camping occurs outside of designated sites as shown by end of season evaluation, move to 2b.		<u>Monitoring:</u> <i>Overnight Tie-ups:</i> If overnight boat tie-up restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie-ups would be established. <i>Designated Campsites:</i> If camping occurs outside of designated sites as shown by end of season evaluation, move to 3b.		<u>Monitoring:</u> <i>Overnight Tie-ups:</i> If overnight boat tie-ups restrictions are not being adhered to and/or tie-ups are impacting shoreline resources, designated tie-ups would be established. <i>Designated Campsites:</i> If camping occurs outside of designated sites as shown by end of season evaluation, move to 4b.	

¹ *Overnight permits* allocate campsites within a particular river segment (Ex: Franconia to Osceola). Permit allows camping in any designated campsite within that river segment.

¹ *Reservations* allocate specifically requested campsites (as available) in advance.

TABLE 2: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Recreation / Visitor Use and Experience	Moderate, long-term impacts on the intended experience. Camping experience is incompatible with the CMP definition of “water management areas” in some areas during 30% or more of the recreation season weekends. Management strategies address camping related social issues to a degree. However, litter, human body waste, and leaving equipment to “hold” sites are still reported as considerable problems.	Minor impacts on intended recreational experience as long as the pass system is honored and demand for designated campsites and space in the backwater zones does not exceed supply. Backwater zones could see influx of visitors seeking camping space if designated campsites along main channel are full. Otherwise, camping experience provided for in the various “water management areas” compatible with the CMP definition and goal to provide a diversity of camping experiences. Overnight use pass would address camping related social issues by ensuring that all overnight users are informed of the rules and regulations related to overnight stays and their purpose.	Similar to 2a, but demand managed so that it would not exceed supply of designated campsites or space in the backwaters. Positive impact to visitors who want to be assured that camping space would be available on river; negative impact to visitors who enjoy spontaneous trips with little or no planning. If canoeist/kayakers travel past their permitted stretch of river or reserved campsite, the impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term, and localized. This would not be an issue with motor boaters. Permit or reservation system would address all four camping related social problems.	Minor impacts on intended recreational experience so long as the pass system is honored and demand for designated main channel campsites does not exceed supply. Camping experience provided for in the various “water management areas” compatible with the CMP definition and goal to provide a diversity of camping experiences. Reservations for the small number of backwater campsites would preserve intended experience in the “Natural Waters” management area. Overnight use pass would address camping related social issues by ensuring that all overnight users are aware of the rules and regulations related to overnight stays and their purpose.	Similar to 3a, but demand for all campsites managed so that it would not exceed supply. Positive impact to visitors who want to be assured that camping space would be available on river; negative impact to visitors who enjoy spontaneous trips with little or no planning. If canoeist/kayakers travel past their permitted stretch of river or reserved campsite, the impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term, and localized. This would not be an issue with motor boaters. Permit or reservation system would address all four camping related social problems.	Minor impacts on intended recreational experience so long as the pass system is honored and demand for designated campsites does not exceed supply. Camping experience provided for in the various “water management areas” compatible with the CMP definition and goal to provide a diversity of camping experiences. In addition, a positive impact on visitors in self-contained boats by making more areas available for their use below Arcola sandbar. Negative impact on visitors who have traditionally tent-camped or would like to below Arcola sandbar. Overnight use pass would address camping related social issues by ensuring that all overnight users are aware of the rules and regulations related to overnight stays and their purpose.	Similar to 4a but demand managed so that it would not exceed supply of designated campsites. Positive impact to visitors who want to be assured that camping space would be available on river; negative impact to visitors who enjoy spontaneous trips with little or no planning. If canoeist/kayakers travel past their permitted stretch of river or reserved campsite, the impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term, and localized. This would not be an issue with motor boaters. Permit or reservation system would address all four camping related social problems.
Park Neighbors	Moderate, long-term impacts. Does not help meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Incompatible activity is relatively localized to Franconia and Swing Bridge areas. Management strategies address camper / private landowner conflicts to a degree, but not to the extent that they are not reported as considerable problems. Impacts are long-term as existing regulations are ineffective at curbing incompatible activity.	Minor impacts as long as the system is honored and demand for designated campsites and space in the backwater zones does not exceed supply. Without a permit system, backwater “zone” camping could create conflicts where adjacent private land or public land that does not allow camping exists. Helps meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Overnight use pass would address all five camping / private landowner related conflicts.	Similar to 2a, but demand would be managed so that it does not exceed supply. Impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term and localized. Reservation or permit system would address all five camping / private landowner related conflicts.	Minor impacts as long as the system is honored and demand for designated main channel campsites does not exceed supply. Ambiguity related to backwater “zone” camping is eliminated by establishing designated backwater sites and requiring reservation for their use. Helps meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Overnight use pass would address all five camping / private landowner related conflicts.	Similar to 3a, but demand for all campsites managed so that it does not exceed supply. Impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term, and localized. Reservation of permit system would address all five camping / private landowner related conflicts.	Minor impacts as long as the system is honored and demand for designated campsites does not exceed supply. Helps meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Overnight use pass would address all five camping / private landowner related conflicts.	Similar to 4a, but demand for all campsites managed so that it does not exceed supply. Impacts from more than one party sharing a campsite or being forced to camp in an undesignated location would be occasional, short-term, and localized. Reservation or permit system would address all five camping / private landowner related conflicts.

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Public Health	Moderate impacts. Human waste is not handled in conformance with applicable rules and regulations. Non-conformance with human waste disposal regulations is commonplace. However, no reports of illnesses have resulted.	Minor impacts. Human waste would be handled in conformance with NPS sanitation guidelines. There may be some cases of non-conformance with human waste disposal regulations, but they would be localized and uncommon.	Same as 2a	Same as 2a	Same as 2a	Same as 2a	Same as 2a
Vegetation and Soils	<p>Below Soo Line High Bridge impacts on heavily used islands along the main navigational channel are major. Vegetation loss is severe; soil erosion obvious in comparison with offsite areas as indicated by exposed tree roots. Trees are being lost.</p> <p>Elsewhere minor to moderate impacts. Minor impacts – vegetation loss and exposed soil is limited to the primary use areas of camping locations; moderate impacts – vegetation loss and bare soil is slightly more widespread; however tree roots are not exposed.</p> <p>Impacts are long-term. Without designated campsites, it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as temporarily closing sites for rest and restoration, are not feasible under the current policy of open camping.</p>	<p>Positive impacts compared to the No Action Alternative. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor and short-term. Vegetation loss would be limited to the primary use areas of designated campsites (around the fire ring, eating area, and access point); protection and restoration measures relatively easy to implement and taken if impacts begin to reach moderate levels.</p> <p>Impacts in backwater zones would be more difficult to mitigate because it is difficult to close areas for restoration under “zone” camping.</p> <p>Existing major impacts (Mile Long, Pillar, South High Bridge islands) are long-term. Restoration would take more than 3 years.</p>	<p>Similar to 2a, however, impact would be further reduced by requiring permits / reservations for designated campsites and space in the backwaters, managing demand so that it does not exceed supply.</p> <p>Even with a permit / reservation system, impacts in backwater zones would be more difficult to mitigate. If the same areas are used repeatedly for camping, impacts could occur that would be difficult to mitigate because it is difficult to close areas under “zone” camping.</p> <p>Existing major impacts (Mile Long, Pillar, South High Bridge islands) are long-term. Restoration would take more than 3 years.</p>	<p>Positive impacts compared to No Action Alternative and Alternative 2a. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term. Vegetation loss would be limited to the primary use areas of designated campsites (around the fire ring, eating area, and access point); protection and restoration measures relatively easy to implement and taken if impacts begin to reach moderate levels.</p> <p>In addition, impacts in the backwaters would be easy to mitigate since designated backwater campsites would be established and reservations required for their use. This would make it very easy to curb use or close the backwater sites for rest and restoration if needed.</p> <p>Existing major impacts (Mile Long, Pillar, South High Bridge islands) are long-term. Restoration would take more than 3 years.</p>	<p>Similar to 3a. Impacts further reduced by requiring permits / reservations for all designated campsites (main channel and backwater), managing demand so that it does not exceed supply. This would reduce impacts outside of designated campsites and make it easier to close sites for rest and restoration.</p> <p>Existing major impacts (Mile Long, Pillar, South High Bridge islands) are long-term. Restoration would take more than 3 years.</p>	<p>Positive impacts compared to other alternatives. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term. Vegetation loss would be limited to the primary use areas of designated campsites (around the fire ring, eating area, and access point); protection and restoration measures relatively easy to implement and taken if impacts begin to reach moderate levels.</p> <p>Existing major impacts (Mile Long, Pillar, South High Bridge islands) are long-term. Restoration would take more than 3 years. However, restoration may be easier to achieve because tent camping would be eliminated below the Arcola sandbar, where the most heavily impacted areas are located.</p>	<p>Similar to 4a. Impacts further reduced by requiring permits / reservations for all designated campsites (main channel and backwater), managing demand so that it does not exceed supply. This would reduce impacts outside of designated campsites and make it easier to close sites for rest and restoration.</p>
Water Quality	<p>Moderate impacts as defined by this document. Camping management does not conform to NPS policy for protecting water quality and minimizing the potential for pollution from human activities. Actual impacts as a result of camping activities difficult to isolate from other inputs; but likely small and fairly localized.</p> <p>Impacts are long-term because strategies to control erosion and manage human body waste are not effective.</p>	<p>Positive impacts as compared to the No Action Alternative. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities.</p> <p>Impacts short-term because strategies to control erosion and manage human body waste would be effective.</p>	<p>Similar to 2a, however, impacts would be further reduced by requiring permits / reservations for designated campsites and space in the backwaters, managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to the No Action Alternative and Alternative 2a. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities.</p> <p>Impacts short-term because strategies to control erosion and manage human body waste would be effective.</p>	<p>Similar to 3a, however, impacts would be further reduced by requiring permits / reservations for designated main channel campsites as well as backwater campsites, managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to other alternatives. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities.</p> <p>Impacts short-term because strategies to control erosion and manage human body waste would be effective.</p>	<p>Similar to 4a however, impacts would be further reduced by requiring permits / reservations for designated campsites and space in the backwaters, managing demand so that it does not exceed supply.</p>

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Floodplains	<p>Moderate impacts. Modification to floodplains creates a considerable impact to natural floodplain values (vegetation, soils, and native animals). However, the risk to human life and property from floodwaters is low.</p> <p>Impacts are long-term. Without designated campsites, it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as temporarily closing sites for rest and restoration, are not feasible under the current policy of open camping.</p>	<p>Positive impacts as compared to the No Action Alternative. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Impacts would have a small measurable impact on natural floodplain values. Impacts would be confined to the primary use areas of designated campsites.</p> <p>Impacts to natural floodplain values at designated campsites would be short-term because it would be relatively easy to implement protection measures and close sites for rest and restoration as needed.</p> <p>Impacts in backwater zones would be more difficult to mitigate because it is difficult to close areas under “zone” camping</p> <p>All proposed campsites are in the 100-year floodplain, but the risk to human life and property from floodwaters would be low.</p> <p>Existing impacts to natural floodplain values on the main navigational channel below the Soo Line High Bridge are major and long-term, and would take more than 3 years to restore.</p>	<p>Similar to 2a, however, impacts would be further reduced by requiring permits / reservations for designated campsites and space in the backwaters, managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to the No Action Alternative and Alternative 2a. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor and short-term. Impacts would have a small measurable impact on natural floodplain values. Impacts would be confined to the primary use areas of designated campsites. It would be relatively easy to temporarily close sites for rest and restoration, as needed.</p> <p>In addition, impacts in backwaters would be limited by establishing designated backwater campsites and requiring reservations for their use.</p> <p>All proposed campsites are in the 100-year floodplain, but the risk to human life and property from floodwaters would be low.</p> <p>Existing impacts to natural floodplain values on the main navigational channel below the Soo Line High Bridge are major and long-term, and may take more than 3 years to restore.</p> <p>In compliance with Executive Order 11988, a Statement of Findings is included in Appendix D.</p>	<p>Similar to 3a but impacts to natural floodplain values further reduced by managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to the other alternatives. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor and short-term. Impacts would have a small measurable impact on natural floodplain values. Impacts would be confined to the primary use areas of designated campsites. It would be relatively easy to temporarily close sites for rest and restoration, as needed.</p> <p>In addition, camping impacts in backwaters would be eliminated as no camping would be allowed there.</p> <p>All proposed campsites are in the 100-year floodplain, but the risk to human life and property from floodwaters would be low.</p> <p>Existing impacts to natural floodplain values on the main navigational channel below the Soo Line High Bridge are major and long-term, and may take more than 3 years to restore. However, Restoration may be easier to achieve under this alternative compared to others because tent camping would be eliminated in the most severely impacted areas.</p>	<p>Similar to 4a but impacts to natural floodplain values further reduced by managing demand so that it does not exceed supply.</p>
Native Animals	<p>Moderate impacts below the Soo Line High Bridge where habitat degradation is greater and crowding is more prevalent. Minor impacts elsewhere.</p> <p>Impacts are long-term. Without designated campsites, it is not possible to limit impacts to specific locations. Customary methods of mitigating impacts, such as temporarily closing sites during sensitive life-cycle stages or for rest and restoration, are not feasible under the current policy of open camping.</p>	<p>Positive impacts as compared to the No Action Alternative. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor and short-term. Impacts to habitat (loss of vegetation and disturbance) would be confined to specific locations on the main channel by establishing designated campsites. These sites could be temporarily closed during vulnerable life-stages to protect animals. Impacts in backwater zones more difficult to mitigate as it is difficult to close “zones” to camping.</p>	<p>Similar to 2a, however, impacts would be further reduced by requiring permits / reservations for designated campsites and space in the backwaters, managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to the No Action Alternative and Alternative 2. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term.</p> <p>In addition, impacts in backwaters would be limited by establishing designated backwater campsites and requiring reservations for their use. Thus, it would be easy to temporarily close sites during vulnerable life-stages to protect animals.</p>	<p>Similar to 3a, however, impacts further reduced by managing demand for main channel as well as backwater campsites so that it does not exceed supply.</p>	<p>Positive impacts as compared to the other alternatives. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term.</p> <p>Restoration of habitat below the Soo Line High Bridge may be easier to achieve under this alternative as no tent camping would be allowed below Arcola sandbar.</p>	<p>Similar to 4a but impacts further reduced by managing demand so that it does not exceed supply.</p>

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Threatened and Endangered Species	<p>Minor to moderate impacts. Minor impacts may occur to listed native mussels as a result of erosion and sedimentation; it may affect a few individuals of threatened or endangered species or have very localized impacts on habitat. The change resulting from erosion of camping areas (as opposed to all inputs) likely has barely perceptible consequences to the species or habitat function.</p> <p>Moderate impacts may be occurring to other listed species such as the bald eagle and trumpeters swans. These species are present during particularly vulnerable life-stages (nesting, rearing young); interference with activities necessary for survival is expected on an occasional basis. The adverse effects are not entirely discountable; however, they are not expected to threaten the continued existence of either listed species at the Riverway.</p> <p>Impacts are long-term. Without designated campsites, it is not possible to limit impacts to specific locations. Customary methods of mitigating impacts, such as temporarily closing sites during sensitive life-cycle stages or for rest and restoration, are not feasible under the current policy of open camping.</p>	<p>Positive impacts as compared to the No Action Alternative. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term. A few individuals of sensitive species could be affected or there could be localized impacts on their habitat. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival.</p> <p>Impacts from designated campsites would be short-term because they could be temporarily closed during vulnerable life-stages to protect threatened and endangered species.</p> <p>Moderate impacts to bald eagles and/or trumpeter swans may occur in backwater zones. Impacts are more difficult to avoid because it would be difficult to close areas under “zone” camping during vulnerable life-stages to protect threatened and endangered species.</p>	<p>Similar to 2a, however, impacts further reduced by managing demand so that it does not exceed supply.</p>	<p>Positive impacts as compared to the No Action Alternative and Alternative 2. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term. A few individuals of sensitive species could be affected or there could be localized impacts on their habitat. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival.</p> <p>Impacts from designated campsites would be short-term because they could be temporarily closed during vulnerable life-stages to protect threatened and endangered species.</p> <p>In addition, impacts to bald eagles and/or trumpeter swans in the backwaters would be reduced to minor. Impacts would be easily avoided since designated backwater campsites would be established and reservations required for their use. Thus, it would be very easy to temporarily close backwater sites to protect threatened and endangered species during vulnerable life-stages.</p> <p>For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “no effect.” Alternative 3b would not affect a listed species or designated critical habitat.</p>	<p>Similar to 3a but impacts further reduced by managing demand for main channel as well as backwater campsites so that it does not exceed supply.</p>	<p>Positive impacts as compared to the other alternatives. As long as demand does not exceed supply of designated main channel campsites, impacts would be reduced to minor and short-term. A few individuals of sensitive species could be affected or there could be localized impacts on their habitat. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival.</p> <p>Impacts from designated campsites would be short-term because they could be temporarily closed during vulnerable life-stages to protect threatened and endangered species.</p>	<p>Similar to 4a but impacts further reduced by managing demand so that it does not exceed supply.</p>
Archeological Resources	<p>The full impact could range from minor to major. Unless the entire area affected by camping is surveyed, sites identified, and their eligibility determined, the level of impact cannot be determined.</p> <p>However, it is known that camping occurs on archeological sites. Impacts that do occur are long-term because it is difficult to effectively</p>	<p>No impact to archeological sites along the main channel as long as demand does not exceed supply of designated campsites.</p> <p>Impacts of backwater zone camping could range from minor to major. A complete survey of the backwater zones has not been completed. However, it is known that numerous archeological resources exist there</p>	<p>Similar to 2a but impacts reduced because demand would be managed so it does not exceed supply.</p> <p>Impacts of backwater zone camping could range from minor to major as there would be no effective way of keeping campers from inadvertently camping on,</p>	<p>No impact to archeological sites along the main channel as long as demand does not exceed supply of designated campsites.</p> <p>No impact to archeological sites in the backwaters. Designated backwater campsites would be established in areas cleared of archeological concerns. Reservations would be required in the backwaters so that demand does not</p>	<p>Similar to 3a but impacts reduced because demand would be managed so it does not exceed supply.</p>	<p>No impact to archeological sites as long as demand does not exceed supply of designated campsites.</p>	<p>Similar to 4a but impacts reduced because demand would be managed so that it does not exceed supply.</p>

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Archeological Resources continued	close sites to protect resources under the current open camping policy.	and under “zone” camping it is difficult to close areas to protect resources.	and possibly damaging archeological sites in the backwater zones.	exceed supply. The determination of effect for § 106 would be <i>no effect</i> or <i>no adverse effect</i>			
Ethnography	<p>A determination of impacts to ethnographic resources or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes were contacted during the development of this EA. No response has been received.</p> <p>However, it is clear that impacts are occurring to soils, vegetation, native animals, and archeology; all of which may be considered ethnographic resources. Impacts are apparent and alter resource conditions. Therefore, the NPS believes the current impacts to ethnographic resources are moderate.</p> <p>This document will be sent to potentially-affected tribes for continued consultation.</p>	<p>A determination of impacts to ethnographic resources or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes were contacted during the development of this EA. No response has been received.</p> <p>The NPS believes that, as long as demand does not exceed supply of designated campsites, impacts on the main channel would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs.</p> <p>The backwaters are important areas for native animals. Archeological resources also exist there. These natural and cultural resources could also be considered ethnographic resources. It is difficult protect resources under “zone” camping. Therefore, the NPS believes the potential impact of backwater zone camping could range from minor to moderate.</p> <p>This document will be sent to potentially-affected tribes for continued consultation.</p>	<p>Similar to 2a but impacts reduced by managing demand so that it does not exceed supply.</p>	<p>A determination of impacts to ethnographic resources or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes were contacted during the development of this EA. No response has been received.</p> <p>The NPS believes that, as long as demand does not exceed supply of designated main channel campsites, impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs.</p> <p>Impacts in the backwaters would be limited by establishing designated backwater sites and requiring reservations for their use.</p> <p>The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for § 106 would be <i>no adverse effect</i>.</p> <p>This document will be sent to potentially-affected tribes for continued consultation.</p>	<p>Similar to 3a but impacts further reduced because demand for all campsites would be managed so it does not exceed supply.</p>	<p>A determination of impacts to ethnographic resources or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes were contacted during the development of this EA. No response has been received.</p> <p>The NPS believes that, as long as demand does not exceed supply of designated campsites, impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs.</p> <p>This document will be sent to potentially-affected tribes for continued consultation.</p>	<p>Similar to 4a but impacts further reduced because demand for campsites would be managed so it does not exceed supply.</p>

Impact Topic	Alternative 1: No Action	Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System	Alternative 4a: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Overnight Use Pass	Alternative 4b: Designated Campsites above Arcola sandbar, Overnight Boat Tie-ups, Permit / Reservation System
Scenic Values	<p>Moderate impacts. Impacts resources critical to scenic values (vegetation, soils, water quality, and native animals) are, by and large, moderate. Major impacts to these resources are relatively localized, but not easily mitigated. Camping is not managed in a way that protects and enhances scenic values.</p> <p>Impacts are long-term. Without designated campsites, it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as temporarily closing sites for rest and restoration, are not feasible under the current policy of open camping.</p>	<p>Positive impacts as compared to the No Action Alternative. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Impacts to resources critical to scenic values would, by and large, be minor, isolated, and easily mitigated.</p> <p>Impacts at designated campsites would be short-term because it would be relatively easy to implement protection and restoration measures.</p> <p>Impacts in backwater zones would be more difficult to mitigate because it is difficult to close areas under “zone” camping.</p> <p>Intrusion from establishing campsites would be minor. Development would be limited and unobtrusive.</p>	<p>Similar to 2a but impacts would be further reduced by managing demand so it does not exceed supply.</p>	<p>Positive impacts as compared to the No Action Alternative and Alternative 2. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Impacts to resources critical to scenic values would, by and large, be minor, isolated, and easily mitigated.</p> <p>Impacts in the backwaters would be minor and short-term. Designated backwater campsites would be established and reservations required for their use. Thus, it would be easy to temporarily close them to protect resources critical to scenic values.</p> <p>Intrusion from establishing campsites would be minor because development would be limited and use unobtrusive materials.</p> <p>Camping would be managed in a way that protects and enhances scenic values.</p> <p>Impacts at designated campsites, both on the main channel and backwaters would be short-term because it would be relatively easy to implement protection measures and close sites for rest and restoration as needed.</p>	<p>Similar to 3a but impacts further reduced because demand for all campsites would be managed so it does not exceed supply.</p>	<p>Positive impacts as compared to the other alternatives. As long as demand does not exceed supply of designated campsites, impacts would be reduced to minor. Impacts to resources critical to scenic values would, by and large, be minor, isolated, and easily mitigated.</p> <p>Intrusion on scenic values from establishing campsites would be minor because development would be limited and use unobtrusive materials.</p> <p>Impacts would be short-term because it would be relatively easy to implement protection measures and close sites for rest and restoration as needed. Restoration of areas below Arcola sandbar may be easier to achieve under this alternative as tent camping on that stretch would be eliminated.</p> <p>Camping would be managed in a way that protects and enhances scenic values and allows for their public use and enjoyment.</p>	<p>Similar to 4a but impacts further reduced because demand for campsites would be managed so it does not exceed supply.</p>

4.0 AFFECTED ENVIRONMENT

This section describes natural and cultural resources of the riverway that are affected by camping, along with social considerations such as the recreational experience, park neighbors, and public health. Topics discussed were identified through the scoping process for this plan, along with field knowledge of the Riverway.

The topics, along with a brief rationale for their selection, are listed immediately below, with citations that reference where, in this section, you will find greater detail. The way that camping is managed can either increase or decrease impacts. The potential impacts of the various alternatives are analyzed in Section 5.0.

Impact Topics Selected for Analysis

Recreation/Visitor Use: Camping management impacts recreation / visitor use by influencing the type of recreational experience visitors have at the Lower Riverway. See Sections 4.1 and 5.1 for additional description and analysis.

Park Neighbors: Recreational activities at the Lower Riverway, including day use and camping, occur in a river corridor that has many year-round residences along its banks and bluffs. In addition, there are other public lands that allow camping in designated campsites only (State Parks) and others that do not allow camping (St. Croix Island Wildlife Area). Based on the results of scoping, camping activities can impact park neighbors through nuisance noise and trespass on private property. See Sections 4.2 and 5.2 for additional description and analysis.

Public Health: Camping activities can impact public health through improper disposal of human waste. See Sections 4.3 and 5.3 for additional description and analyses.

Vegetation: Camping activities impact vegetation through trampling and denuding heavily used areas. Camping management strategies can either increase protection of vegetation or decrease it. See Sections 4.4 and 5.4 for additional description and analysis.

Soils: Soils are impacted by camping activities when areas are denuded of vegetation and become more vulnerable to erosion from rain, boat wakes, and flooding. Camping management can either increase protection of vegetation and soils or decrease it. See Sections 4.5 and 5.5 for additional description and analysis.

Water Quality: Camping activities can impact water quality when areas are denuded of vegetation, soils are left vulnerable to erosion, and erosion carries soils (sediment) into the water. In addition, human waste (feces) from camping can negatively impact water quality.

through eutrophication. Camping management has an impact on water quality through strategies that either increase or decrease its protection. See Sections 4.6 and 5.6 for additional description and analysis.

Floodplains: Camping activities impact floodplains by impacting the natural resources that make up floodplain ecosystems such as soils, vegetation, water quality, and native animals. Camping management has an impact through strategies that either increase or decrease protection of the natural resources that make up floodplain ecosystems. In addition, the vast majority of camping on the Lower Riverway occurs within the 100-year floodplain. Therefore, the impact of camping on floodplain ecosystems as well as the risk to human life and property associated is discussed in Sections 4.7 and 5.7.

Native Animals: Camping activities can impact native animals through degrading habitat and disturbing feeding, breeding, and resting activities. Camping management has an impact through strategies that either increase or decrease protection of native animals and their habitat. See Sections 4.8 and 5.8 for additional description and analysis.

Threatened and Endangered Species: Camping activities can impact threatened and endangered species through habitat degradation and disruption of feeding, breeding, and resting behaviors. Camping management has an impact on threatened and endangered species through strategies that either increase or decrease protection of threatened and endangered species. See Sections 4.9 and 5.9 for additional description and analysis.

Archeological Resources: Camping activities can impact archeological resources through construction of campsites and through use of areas which can compact and/or erode soils. Soil compaction and/or erosion can damage and expose archeological resources. Camping management has an impact on archeological resources through strategies that either increase or decrease protection of archeological resources. See Sections 4.10 and 5.10 for additional description and analysis.

Ethnography: Camping activities can impact ethnographic resources by damaging natural and cultural resources that are important to peoples that are traditionally associated with the Lower Riverway. Camping management has an impact on ethnographic resources through strategies that either increase or decrease their protection. See Sections 4.11 and 5.11 for further description and analysis.

Scenic Resources: Camping activities can impact scenic resources by impacting its key components including vegetation, soils, and native animals. Camping management has an impact on scenic resources through strategies that either increase or decrease protection of these key components. See Sections 4.12 and 5.12 for additional description and analysis.

Impact Topics Eliminated from Further Analysis

Geology: Geologic values are one of the three outstandingly remarkable values for which the Lower Riverway was designated. The study leading to designation specifically identified the basalt formations of the Dalles of the St. Croix, along with their potholes and other features as outstandingly remarkable values. These resources are in the Wisconsin and Minnesota Interstate State Parks, managed by the respective States. Other geological features of the Lower Riverway include limestone cliffs. No camping occurs or is proposed in the limestone cliffs. Therefore, geology is not affected by camping on the Lower Riverway and this impact topic is not discussed further.

Air Quality: Camping activities have a negligible impact on air quality through campfires. Therefore, this impact topic is not discussed further.

Prime and Unique Farmlands: The Natural Resource Conservation Service, some counties, and other organizations have identified prime and unique farmlands within the boundary of the Lower Riverway (NPS/NPS, 2000a). However, the areas where camping currently occurs and where designated campsites are proposed are not considered prime or unique farmlands. They are sandy alluvial deposits along the riverbank and on islands. Therefore, this impact topic is not discussed further.

Wetlands: Executive Order 11990 "Protection of Wetlands" (3 CFR 121, Supp. 177) requires Federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands. It further requires Federal agencies to avoid undertaking or providing assistance to new construction located in wetlands. No designated campsites are proposed in wetlands under any of the action alternatives. In addition, wetlands are not desirable places to camp under the no action alternative or under the backwater zone camping contemplated in Alternatives 2a and 2b. Therefore, the impact of camping to wetlands is negligible and is not discussed further.

Noise: The direct impacts of construction of designated campsites, such as that arising from the use of hand and power tools, would be negligible and short-term. Other noise impacts are indirect and arise from the use of campsites. These indirect noise impacts are considered under impacts to park neighbors and recreation/visitor use rather than under a specific noise heading.

Historic Structures: There are three historic structures that are listed on the National Register of Historic Places in the Federally-administered section of the Lower Riverway. They are the Marine Mill Site, Arcola Mills, and the Soo Line High Bridge. The limestone pillars that remain from the old railroad bridge (near river mile 28) may also be historic, but

their eligibility to the National Register has not been determined. None of these properties are owned by the NPS. None are affected by camping. Therefore, the impact of camping on historic structures is not discussed further.

Cultural Landscapes: The NPS is required to identify and protect significant historic or cultural landscapes under its jurisdiction. The Lower Riverway does not have a cultural landscape report. However, an initial survey of sites was completed in the mid-1990s. This survey looked at landscapes in conjunction with houses, as these were considered to be the most likely locations for cultural landscapes. No significant cultural landscapes were identified on the Lower Riverway during the initial survey. Therefore, this impact topic is not discussed further.

Socio-economics: The economies of the four counties bordering the Federally-administered zone of the Lower Riverway all have services, state and local government, and durable goods manufacturing among their top three industries, in terms of earnings. The Lower Riverway, adjacent state parks, and the scenic St. Croix Valley, attract many visitors, particularly from the nearby Twin Cities and a portion of the service industry is related to tourism. The tourism industry is highly seasonal in nature and dependent on weather, even in the summer season. Camping is provided in other places along and near the Lower Riverway including the State Parks and private campgrounds. In addition, visitor surveys indicate that most visitors (75%) spend less than a day at the Riverway (Littlejohn, 2000). A change in the way camping is managed on the Lower Riverway would have no or negligible impact on any community's overall population, income or employment base. Therefore, this impact topic is not discussed further.

4.1 Recreation / Visitor User and Experience

Recreational facilities along the Lower Riverway include landings, picnic areas, hiking trails and some camping-related facilities such as at Eagle's Nest campground. Summer is the busiest season for both day-users and overnight visitors. Water-based recreation activities are the primary uses. The Lower Riverway's scenic character and high water quality (suitable for body-contact recreation) make it popular for all types of boating recreation. The Riverway is prized as a setting for recreational boating by a high percentage of Minnesota registered boat owners, whether they own and operate a canoe or a motorized craft (Schatz, McAvoy, Pitt and Lime, 1989). The upper reaches are most suitable for canoeing, small fishing boats, and pontoon boats. The wider, deeper sections of the lower reaches see more power boating. Besides boating, recreational activities include swimming, fishing, camping, and nature appreciation. Camping is a traditional recreational use that has been enjoyed by generations of visitors to the Lower Riverway.

Recreational Use Study

A study of the recreational use of islands and shorelines in the Federally-administered zone was completed in 1996 (Dalton, 1996). The study used onsite group interviews and questionnaires to gather information about recreation behavior; who users are and where they come from; and what their opinions are about various aspects of the river experience. The survey broke the Federal-administered section into three study zones; Zone 1) Taylors Falls/St. Croix Falls to Osceola; Zone 2) Osceola to Arcola sandbar; and Zone 3) Arcola sandbar to north Stillwater.

Most of the groups sampled in study zones 1 and 2 were day users. The majority of groups in Zone 3 (58%) were camping when interviewed. The average group size for camper groups in all three study zones was between 5-6 people. In Zone 3, 32% of the groups consisted of 8 or more people. Camper groups in all three zones averaged between 1-2 nights at the site where interviewed. Zone 3 campers reported the longest stays; 33% expected to stay 3 or more nights. A majority (80%, 83%, and 86%, respectively per zone) reported residence in the Twin Cities Metropolitan Area. Smaller percentages (13%, 8%, and 7%, respectively per zone) reported residence in the western Wisconsin counties bordering the Lower Riverway. Zone 3 had the most repeat campers; 42% reported having previously camped 10 or more times in this zone on weekends.

Interviewees were asked their opinions about potential problems they may have experienced while recreating on the river. Some of the questions related to the issues addressed by this camping management plan. Table 3 presents related issues reported as “moderate”, “serious”, or “very serious” on weekends.

TABLE 3: RECREATIONAL USER SURVEY RESULTS - PROBLEMS

Perceived Problem	Zone 1	Zone 2	Zone 3
People littering on islands and shorelines	36%	60%	70%
Presence of human body waste (feces) & toilet paper on islands and shorelines	28%	40%	47%
Erosion of islands and shorelines caused by high boat wakes	31%	44%	55%
Erosion of islands and shorelines caused by high water or winds	22%	47%	51%
Loss of trees, grass, and other plants on islands and shorelines	30%	32%	43%
People leaving camping and other equipment unattended to hold a site for later use	24%	24%	53%
Not being able to find a place to camp for the night on islands or shorelines	30%	38%	54%

Inventories of Camping Use

Inventories of camping use were completed by NPS staff and volunteers during the summers of 2002 and 2003 (unpublished information). The results of those inventories are shown in Table 4.

TABLE 4: RECORDED RANGE OF CAMPING USE

River Segment	Number of Camps	Number of Persons	Number of Surveys
Interstate Landing to Osceola Landing	3-4 ¹	7-11 ¹	4
Osceola Landing to Log House Landing	6-15 ²	15-74 ²	6
Log House to Marine	0-1	0-3	3
Marine to Arcola	5 ³	18	1
Arcola sandbar to Stillwater	6-19*	31-116*	9

¹ The existing designated campsites at Eagle's Nest may also have been occupied. However, those sites are not visible from the river and were not counted in the float-by inventory.

² The high end of the range is represented by relatively large congregations of people who camp on the islands just below the Swing Bridge. Some of this use occurs as trespass on private property.

³ Of these, 2 were in the area across from Marine that is in a "no camping zone" and 3 were on land owned by the State of Wisconsin (St. Croix Islands Wildlife Area). The wildlife area is along the St. Croix River but outside the boundary of the Riverway. Camping is not allowed in the wildlife area.

* Highest levels of use occur during the middle of the summer on nice weekends when there are up to 29 camps. The number of camps on the 4th of July weekend can exceed 29 (Personal Communication, 2006).

4.2 Park Neighbors

Recreational activities along the Lower Riverway occur in a river corridor that has many year-round residences along its banks and bluffs. Many of these riparian landowners also recreate on the river. In addition, there are other public lands along the corridor, including state parks and a state wildlife area (St. Croix Islands Wildlife Area). The state parks allow camping in campgrounds in designated campsites only. The primary purpose of the wildlife area is to provide breeding, rearing, feeding and resting areas for wildlife; camping is not allowed.

A survey of residential property owners in the federal zone was completed in 1996 (Thompson, 1996). A mail-back questionnaire was sent to all residential property owners that had a dwelling within the boundary of the Federally-administered zone. The same three study zones were used as in the recreational use study; Zone 1) Taylors Falls/St. Croix Falls to Osceola; Zone 2) Osceola to Arcola sandbar; and Zone 3) Arcola sandbar to north Stillwater. At the time of the study, there were approximately 35 residences within the Riverway boundary in the 7-mile stretch between Taylors Falls/St. Croix Falls and Osceola. Villages within this zone include Franconia, Minnesota and Osceola, Wisconsin. In the 15-mile stretch of river between Osceola and the Arcola sandbar, there were approximately 221 residential properties. Villages within this zone include Osceola, Wisconsin and Copas and Marine on St. Croix, Minnesota. The 5-mile stretch from Arcola sandbar to north Stillwater had approximately 75 residences. The number of residences in all three zones has likely increased since the study was completed due to additional home development, but the amount of increase is unknown.

The return rate for the survey of residential property owners was 80%. The most popular activity in all zones was observing wildlife. Other popular activities included canoeing, motor boating and pontoon boating, and visiting islands and shorelines for part of the day.

Fourteen to 24%, depending on the zone, reported camping at least once on the stretch where they own property.

The survey included questions related to the issues addressed by this camping management plan. According to survey results, the following problems were reported as “moderate,” “serious” or “very serious” on weekends.

TABLE 5: RESIDENTIAL PROPERTY OWNER SURVEY RESULTS

Perceived Problem	Zone 1	Zone 2	Zone 3
People being noisy on islands and shorelines after dark	32%	52%	75%
People littering on islands and shorelines	54%	62%	72%
Presence of human body waste (feces) & toilet paper on islands and shorelines	30%	47%	68%
People drinking alcoholic beverages on islands and shorelines	50%	52%	61%
People trespassing on private property along river	44%	40%	56%
Erosion of islands and shorelines caused by high boat wakes	35%	62%	75%
Erosion of islands and shorelines caused by high water or winds	50%	59%	64%
Loss of trees, grass, and other plants on islands and shorelines	50%	59%	64%
People leaving camping and other equipment unattended to hold a site for later use	17%	35%	65%
Not being able to find a place to camp or stop for the day on an island or shoreline	29%	30%	62%
People camping too close together on islands and shorelines	17%	35%	65%

4.3 Public Health and Safety

Sanitation is one of several services of concern to the NPS. In developed park areas, there are federal, state and/or local codes designed to protect the public health (NPS, 2004). Sanitation in non-developed areas managed by the NPS, such as primitive campsites, is governed by 36 CFR § 2.14. It states that in non-developed areas, human waste (feces) must be buried at least 6 inches under the ground. Disposal cannot be within 100 feet of a water source or high water mark of a body of water. The regulation goes on to state that the park superintendent may establish conditions concerning the carry-out of human body waste.

4.4 Vegetation

The Lower Riverway is within the prairie-forest floristic province (Curtis, 1971). The prairie-forest floristic province is made up of several distinct plant communities. Southern dry and mesic forests of oak and maple occur in more upland sites; the driest areas support hill prairies and basalt glades. Many of the islands and river banks are forested with

bottomland species such as silver maple, willow, cottonwood, basswood, elm and ash. The Riverway is also rich in communities that are transitional between terrestrial and aquatic. They include alder thickets, river beach, and emergent aquatic plant communities.

A study of changes in forest cover on the islands between the Swing Bridge (river mile 41.3) and Boomsite Landing (river mile 25.3) has been conducted. Aerial photographs from 1969 and 1991 were compared. The results show that the forested portions of islands below the Arcola sandbar have become increasingly smaller and more fragmented whereas forested areas of islands between the Swing Bridge and Arcola sandbar have become larger and more concentrated (Pitt, David G. et al, 1999). The quantitative shoreline surveys discussed in Section 4.5 below indicate that foot-traffic trampling and boat waves are major contributing factors to shoreline erosion (Griffin, Wendy et al, 2000). Both this and the forest cover study indicate that while natural forces such as flooding continue to shape the islands and shorelines, human-induced impacts related to trampling of vegetation and boat wakes are causing loss of vegetative ground cover, the erosion of shorelines, and the loss of trees.

In addition to these studies, a baseline assessment of the condition of areas used for camping between the Arcola sandbar and north Stillwater was conducted by NPS staff in 1998 and 1999 using established protocols (Marion, 1991). Sixty distinct areas were identified. Of these 60 areas, 13 (or 22%) were ranked as being in “Condition Class 4,” with nearly complete or total loss of vegetation cover with bare soil widespread. Five (or 8%) were ranked as being in Condition Class 5,” with soil erosion obvious in comparison to off-site areas as indicated by exposed tree roots (unpublished data, 1999). A baseline condition assessment of areas used for camping above Arcola sandbar has not been conducted. However, casual observation would indicate that the majority are in relatively good condition and fall into “Condition Class 3,” with some bare soil exposed in primary use areas.

4.5 Soils

Some of the soils along the Riverway were formed in material laid down by glaciers and from organic material; other soils formed from alluvium and wind blown deposits. In general, the island and shoreline areas along the St. Croix River are either sandy alluvial deposits or mucky wetland soils. The sandy alluvial deposits are easily eroded.

Two studies have characterized the existing condition of soils along the Riverway. Both focused on the section of river between the Soo Line High Bridge and north Stillwater. One study was a qualitative assessment of the erosion condition (Ferrin, et al., 1998) and the other was a quantitative island and shoreline survey (Griffin, et al., 2000).

The qualitative assessment of the erosion condition of the islands and shorelines evaluated erosion using the following criteria:

Low erosion: well vegetated with both ground cover and overhead canopy, gently sloped, with little or no evidence of erosion.

Moderate erosion: gently to moderately sloped, some bare soil, some roots exposed, and evidence of erosion.

High erosion: steep slope or cut bank, exposed tree root wads, little or no ground cover, bare soil, evidence of recent erosion.

The study found that:

Nearly 25% of the shoreline between the Soo Line High Bridge and north Stillwater was in the moderate to high erosion categories.

75% was in the low erosion category.

The majority of shoreline associated with the main navigation channel was in the moderate to high erosion class.

Most of the shoreline classified as low erosion was located away from the main navigational channel.

The quantitative island and shoreline surveys were conducted on sites that included the following categories:

1. Survey sites with no foot-traffic trampling and no recreational boat waves;
2. Survey sites with no foot-traffic trampling with recreational boat waves;
3. Survey sites with foot traffic trampling with no recreational boat waves; and
4. Survey sites with both foot-traffic trampling and recreational boat waves.

These surveys showed that 11 of the 14 survey sites experienced net erosion and three experienced net deposition. When sorted by category, those sites with boat waves and/or foot-traffic trampling experienced net erosion while sites with no boat waves and no foot traffic experienced net deposition. At some sites, there was not a clear progression of erosion, but rather a series of erosion events followed by some deposition and then some more erosion. These surveys suggest that foot-traffic trampling and boat waves are major contributing factors to shoreline erosion in the study area (Griffin, et al., 2000).

Quantitative erosion studies have not been conducted upstream of Arcola sandbar. However, based on anecdotal evidence and observation, the areas that were traditionally used for camping across from Marine on St. Croix were experiencing moderate to high erosion with exposed root wads. Since their closure in 1998, vegetation has restored itself in denuded areas, providing a protective cover from the forces of erosion. Other popular traditionally-used areas, particularly along the Franconia to Osceola stretch of river, show evidence of moderate erosion.

4.6 Water Quality

The St. Croix River is generally considered to have high water quality. The water is characterized as a calcium bicarbonate type, which reflects the glacial drift through which the groundwater flows. Dissolved oxygen is generally high, above 5 milligrams per liter.

The water has a moderate brown color caused principally by organic acids and fine organic detritus drained from the thousands of acres of marshes and peat bogs in the basin.

To help protect its water quality, the St. Croix River has been designated by Wisconsin as an "outstanding resource water" and by Minnesota as an "outstanding resource value waters - restricted." The Wisconsin classification means that a proposed new discharge or an increased discharge from a municipal or industrial source would not be permitted unless the effluent meets the background level in the river. Minnesota's classification means that a proposed new or increased discharge would not be allowed unless there was no prudent or feasible alternative.

Sources of pollution include non-point sources outside the Riverway such as runoff from lands developed by agriculture, forestry, roads, or residential or industrial areas. Sediments carried into the river from islands, river banks, and nearby land and tributaries during heavy runoff events can cause turbidity. Water transparency, as measured by Secchi disc readings, may vary from 2 to 4 feet depending on the time since last runoff (NPS, 1998).

In order to protect the water quality of the St. Croix River, the NPS and the States of Minnesota and Wisconsin have agreed to cooperate to achieve a 20% reduction in loading of phosphorous and other nutrients. The 20% reduction goal is based on research conducted through the interagency St. Croix Basin Water Resources Team, of which the NPS is a member.

4.7 Floodplains

Flooding is common on the Riverway and most likely from snowmelt and rainfall in the spring and intense storms in the summer. Peak elevation at St. Croix Falls for a 100-year flood is 718.5 feet.

Executive Order 11988, "Floodplain Management" requires Federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid direct or indirect support of floodplain development. In compliance with the order, it is NPS policy to restore and preserve natural floodplain values and minimize potentially hazardous conditions associated with flooding.

The frequent flooding is an important consideration in determining what type of facilities and amenities (toilets, picnic tables etc) should be provided at campsites.

4.8 Native Animals

The variety of upland, lowland, and aquatic habitats found along the Riverway supports a highly diverse and abundant native animal population. More than 430 species of animals have been recorded. These include insects, mussels, fish, amphibians, reptiles, birds, and mammals.

Mussels: The Riverway supports the most diverse mussel population in the upper Mississippi River system. Approximately 40 species of native mussels occur at the Riverway, including two federally-listed endangered species and several state-listed species (NPS, 2000b). Additional information on mussels is given in the section on threatened and endangered species.

Fish: The Riverway supports a healthy, diverse fish population. Warm-water riverine fisheries occur on the St. Croix River. Common fish include smallmouth bass, walleye pike, northern pike, catfish, a variety of redhorse suckers, and minnows.

Amphibians and Reptiles: Common species present on the Lower Riverway include the blue-spotted salamander, American toad, spring peepers, green frogs, snapping turtle, eastern spiny softshell turtle, common map turtle, eastern garter snake, green snake, and hog-nosed snake.

Birds: The Riverway supports a diverse population of upland and water birds and is an important route for migrating birds. More than 200 species have been documented in the Riverway; about 158 likely nest in the Riverway. Birds commonly seen or heard include the red-winged blackbird, great blue heron, green heron, belted kingfisher, tree swallows and a variety of woodpeckers, flycatchers, warblers, and sparrows. Eight raptor species are present including osprey, red-tailed hawk, red-shouldered hawk, broad-winged hawk, rough-legged hawk, sharp-shinned hawk, Cooper's Hawk, American kestrel, and bald eagle. Upland game species include ruffed grouse, woodcock, and turkey. Common waterfowl include the wood duck, Canada geese, mallard and common merganser. Federally-listed birds that occur at the Riverway include the bald eagle. More information on the bald eagle is given in the section on threatened and endangered species.

Mammals: Many mammals common to both the northern coniferous forest and the temperate deciduous forest use the Riverway and move back and forth across the Riverway's boundaries. The white-tailed deer is the most common big game animal. Other common mammals include mink, weasel, skunk, otter, muskrat, beaver, raccoon, gray squirrel, red squirrel, masked shrew, short-tailed shrew, deer mouse, meadow vole, little brown bat, and big brown bat. Mammals that occur, but are less likely to be seen, include the woodchuck, black bear, coyote, badger, red fox, and gray fox. Gray wolves occur on the upper Riverway (upstream of St. Croix Falls), but not on the Lower Riverway.

4.9 Threatened and Endangered Species

The Riverway serves as a refuge for a number of federally-listed and state-listed threatened or endangered species. Federally-listed endangered species that occur in the Riverway include the Higgins' eye pearly mussel and the winged mapleleaf mussel. The bald eagle, which occurs along the Riverway, is a federally-listed threatened species. It is currently under review for possibly delisting in the lower 48 states. State-listed species that occur on the Lower Riverway are listed in Appendix C.

Federally-listed Species:

Three “Essential Habitat Areas” for the Higgins’ eye pearl mussel have been identified on the Lower Riverway. Essential Habitat Areas are those areas that the U.S. Fish and Wildlife Service (USFWS) and its partners have found to be of utmost importance to the conservation of the species. One is within the Federally-administered zone near Franconia, Minnesota from approximately river mile 50 to river mile 49, entire channel. The other two are in the State-administered section of the Lower Riverway across from Hudson, Wisconsin. These essential habitat areas are located 1) from the railroad bridge downstream to the Interstate 94 Bridge and 2) near Prescott, Wisconsin, at the confluence with Mississippi River (USFWS, 2004). Higgins’ eye pearl mussel is a large river species that occupies stable substrates that vary from sand to boulders. It is not found in firmly packed clay, flocculent silt, organic material, bedrock, concrete or unstable sand (USFWS, 2004).

The winged mapleleaf mussel occurs in the Lower Riverway from St. Croix Falls to Cedar Bend (approximately river mile 53 to river mile 42). It is most numerous between St. Croix Falls and Franconia (Hove, 2004). The habitat requirements of winged mapleleaf mussel are currently being studied. It appears to favor stable substrates of rubble, gravel and sand.

Recent studies show that a decrease in juvenile mussels at the Lower Riverway has been accompanied by an increase in small sediments (sand) (Hove, 2004). This could mean that increased sedimentation of the Lower Riverway is causing a decline in habitat quality for mussels.

Nesting bald eagles are associated almost exclusively with lakes, rivers or seacoasts. Fish are the major item of their diet. Adults tend to use the same breeding area, and often the same nest, each year. The nests are primarily in large trees, usually within 0.25 miles of the shoreline of fish-bearing streams or lakes. The Riverway provides important bald eagle habitat, for both breeding and wintering birds. Approximately 10 nests are located along the 27 miles of the Federally-administered section. Essential habitat for bald eagles has 1) space for individual and population growth and normal behavior; 2) food, water, air, light, minerals or other nutritional or physiological requirements; 3) cover or shelter; 4) sites for breeding, reproduction, rearing of offspring; and 5) protection from disturbance. Good winter habitat has a readily available food supply, in conjunction with one or more suitable night roost sites.

The NPS, through consultation with the USFWS, has developed a number of measures to protect bald eagles at the Riverway (NPS, 2001). To prevent disturbance, if nesting bald eagles are present, human activity is to be kept back at least 660 feet from the nest during the most critical and moderately critical nesting periods. These nesting periods run from February 1 to July 31.

State-listed Species:

Of the state-listed species listed in Appendix B, the mussels and trumpeter swan could be affected by camping.

The Lower Riverway provides important habitat for state-listed mussel species. Spectacle case and salamander mussel are known to occur just upstream of Franconia (Hove, 2004). Round pig-toe and mucket, both state-threatened species have been recorded in the state – administered zone on the Wisconsin side of the river opposite the Allan S. King power plant (Kenyon, 1996). This location is approximately 2.5 miles downstream of north Stillwater/Mile Long Island.

Recent studies show that a decrease in juvenile mussels at the Riverway has been accompanied by an increase in small sediments (sand) (Hove, 2004). This could mean that increased sedimentation of the Riverway is causing a decline in habitat quality for mussels.

Trumpeter swans were once considered for federally-listed endangered status, but ultimately were not listed. There are nearly 12,000 trumpeter swans in Alaska. In addition, populations exist in Canada along the Pacific Coast and the Rocky Mountains. In the Midwestern United States, however, the trumpeter swan is actually rarer than the federally-listed threatened bald eagle.

Trumpeter swans winter and nest along the Riverway. Wintering trumpeters feed and rest on open stretches of water along the main channel. Nesting birds are found in the backwaters.

A trumpeter pair typically arrives on the breeding grounds soon after ice melt in early spring. They nest in large, shallow wetlands 1-3 feet deep with a diverse mix of emergent vegetation and open water, which offers ideal habitat. Nest-building begins in mid-April and may take up to two weeks. Beginning in late April to early May, the female lays eggs. The incubation period lasts about 33-34 days. The cygnets hatch in June. After a day or two, they take to the water to feed on insects and other aquatic invertebrates. The first flights take place in late September.

4.10 Archeological Resources

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. What make archeological resources significant are their identity, age, location, and context, in conjunction with their capacity to reveal information about past human activity. Archeological resources along the Lower Riverway reflect the use and occupation of the St. Croix Valley for thousands of years. The Riverway was used as a transportation corridor and food source, with occupation sites along its shores since the retreat of the glaciers. Resources were also extracted from the area to support the Native peoples' (primarily Dakota and Ojibwe) lifestyle, including the raw materials for tools and pottery. Burial mounds and graves have also been identified on the bluffs and shorelines. Euro-American sites document the first contact, settlement and early logging history of the area. While hundreds of sites have been identified, few in the

Riverway have been investigated in detail. Sites include trash middens and portions or evidence of structures and associated features built on the landscape.

4.11 Ethnography

Ethnographic resources are those cultural and natural resources to which traditionally-associated communities ascribe cultural significance and that continue to play a role in a community's identity and way of life. Ethnographic resources can encompass any of numerous cultural or natural resources. Among the more common types of ethnographic resources are sacred and traditional use sites, traditional properties, ceremonial sites and areas, and sites and features from prehistoric and historic periods. Other cultural resources, including buildings, other structures, and archeological sites, may also constitute ethnographic resources. Natural resources including native plants and wildlife are considered ethnographic resources and are important for food, medicinal, and ceremonial uses. Wetlands, waterways, and landscapes may also qualify as ethnographic resources. Only the members of the communities to whom the resources hold cultural value can determine ethnographic resources and potential impacts to them.

The NPS is involved with several tribal groups in determining the significance of Riverway resources. Early discussions recognized the importance of healthy ecosystems for support of their spiritual and traditional lifestyle. In addition, a survey of the Upper and Lower Riverway has been conducted with Ojibwe and Dakota elders. Specific site visits were made to various locations on the Lower Riverway. Dakota elders expressed concern about litter, trampling of vegetation, human disturbance of wildlife, pollution from motorboats, pesticides, herbicides, and acid rain on the natural resources of the St. Croix (Zedeno et. al, 2001).

4.12 Scenic Resources

The Lower St. Croix National Scenic Riverway was established under the Wild and Scenic Rivers Act to protect and enhance its outstanding geologic, scenic, and recreational values. The Lower Riverway has a natural appearance for much of its length, the exceptions being where towns and villages occur along its banks. It passes through various landscapes - ranging from a narrow, meandering, and densely forested stream to areas that provide expansive views of a wide river valley. The scenery includes an abundance of wildlife including turtles, songbirds, herons, bald eagles and the occasional otter. The study preceding designation of the Lower Riverway points out the significance of the island and slough environment to the scenic values for which the Riverway was established (DOI, 1973). Retaining scenic values requires maintenance of the island, riparian and bluffland landforms that comprise the Riverway landscape.

5.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA forms the scientific and analytic basis for comparing the environmental advantages and disadvantages of each alternative (as required by 40 CFR 1502.14). The discussion of impacts is organized in parallel with the topics described in Section 4.0 (Affected Environment). The impacts of all of the alternatives on each resource topic are discussed.

To the extent possible, the direct, indirect, and cumulative impacts of each alternative are described for each resource topic. Direct impacts are those potentially caused by the action that would occur at the same time and place as the action. Indirect impacts are those caused by the action that would occur later in time and/or would be farther removed in distance but are still reasonably foreseeable. Cumulative impacts are impacts on specific resources that result from the incremental impact of that action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions.

Intensity, Duration, and Type of Impact – The evaluation of alternatives takes into account whether the impacts would be minor, moderate, or major; with minor being barely detectable, moderate being clearly detectable, and major being a substantial alteration of current conditions. The duration of impacts is evaluated based on the short-term or long-term nature of changes brought about by the alternative. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative. More exact interpretations of intensity, duration, and type of impact are given for each topic examined. Professional judgment is used to reach conclusions as to the intensity and duration of potential impacts.

Impairment Analysis – The National Park Service *Management Policies* (NPS, 2001) requires that potential impacts be evaluated to determine whether they are severe enough to impair Riverway resources or values. The fundamental purpose of the national park system, of which the Federally-administered zone is part, was established by the NPS Organic Act and reaffirmed by the General Authorities Act, as amended. The Organic Act states that the NPS “shall promote and regulate the use of Federal areas known as national parks, monuments, and reservations...by such means and measures as conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations” (16 USC 1). The Riverway’s enabling legislation (the Wild and Scenic Rivers Act, Public Law 90-542) further mandates resource protection.

National Park Service managers must always seek ways to avoid, or minimize to the greatest degree practicable, actions that would adversely affect park resources and values (NPS *Management Policies*, 2001, Section 1.4 Park Management). However, the enabling laws give the NPS management discretion to allow certain impacts to park resources, so long as

the impact does not constitute impairment. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Riverway;
Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the Riverway;
Identified as a goal in the Riverway's general management plan or other relevant NPS planning documents.

The Lower Riverway was established by Congress to protect and enhance its free-flowing character, water quality and outstanding scenic, recreational, and geologic values for current and future generations. Impairment is analyzed in this EA for each alternative, including no-action, for each resource impact topic.

5.1 Recreation / Visitor Use and Experience

5.1.1 Methodology

The impact analysis focuses on two aspects of the recreational experience on the Lower Riverway: 1) the compatibility of each alternative with the intended recreational experience as defined in the "water management areas" established by the Cooperative Management Plan; and 2) how well each alternative addresses the social issues reported in the recreational use study described in Section 4.1.

The Cooperative Management Plan sets forth the basic management philosophy for the Lower Riverway. It states that one of the primary purposes of the Lower Riverway is to accommodate a diverse range of recreational opportunities that do not detract from its exceptional natural, cultural, scenic, and aesthetic resources (NPS, 2000). In keeping with providing a diverse range of recreational opportunities, the CMP defined three "water management areas" for the Federally-administered portion of the Lower Riverway. The three water management areas are 1) Moderate Recreation, 2) Quiet Waters, and 3) Natural Waters. Their location and intended recreational experience is described below:

- 1) Moderate Recreation Area - Main channel from Arcola sandbar downstream to the north city limits of Stillwater. Users will encounter moderate numbers of people and watercraft on the water. A variety of boat types, but primarily motorized, may be present; there will be moderate opportunities for solitude.
- 2) Quiet Waters – Main channel from Taylors Falls/St. Croix Falls to Arcola sandbar. During peak times, users will encounter large numbers of people and boats. During non-peak times users will encounter small numbers of people engaged in "low impact" activities. Opportunities for solitude will vary from low during peak times to high during non-peak times.

- 3) Natural Waters – Backwaters north of Stillwater. Users in this management area will experience a sense of peace and quiet and may expect opportunities for solitude. The numbers of people and watercraft will be low – users could anticipate a low probability of encountering other people on the water. A sense of a remote, backwater experience will be preserved.

There is also an “Active Social Recreation” water management area in the State-administered zone from Stillwater to Prescott/Point Douglas. This further expands on the range of recreational opportunities on the Lower Riverway.

The social issues reported in the recreational use study are restated below:

- People littering on islands and shorelines;
- Presence of human body waste (feces) and toilet paper on islands and shorelines;
- People leaving camping and other equipment unattended to hold a site for later use;
- Not being able to find a place to camp for the night on islands or shorelines.

Basis of Analysis – The Cooperative Management Plan, the product of a 6-year public planning process, was developed to guide management of the Lower Riverway over the next 15-20 years. It defined the previously described “water management areas” which describe how different portions of the Lower Riverway would be managed to achieve the desired resource and recreational experience conditions. Subsequent management decisions should be consistent with the guidance contained in the CMP.

Definitions of Intensity, Duration, and Type of Impact

Minor – The camping experience in each water management zone is compatible with the definition given in the CMP. Any incompatible activity is short-term and localized. Management strategies address all four of the social issues related to camping.

Moderate – The camping experience in water management zones is incompatible with the definition given in the CMP in some areas at some times. Incompatible activity is fairly localized, but occurs 30% or more of the recreation season weekends (defined as May 15 to Sept 15). Management strategies address the social issues to some degree, but not to the extent that they are not reported as moderate to serious problems.

Major – The camping experience in each water management zone is incompatible with the definition given in the CMP. Incompatible activity is widespread and occurs 30% or more of recreation season weekends. Management strategies do not address the social issues.

Duration –

- *Short-term:* Activity that is incompatible with management area description, but quickly and easily corrected by an informational or enforcement contact with campers.
- *Long-term:* Activity that is incompatible with management area description, recurring, and not quickly or easily corrected by an informational or enforcement contact with campers, because management strategies are not effective at curbing the activity.

5.1.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts on Recreational Use and Experience – As described in Section 4.1, large numbers of people often congregate and camp in the Moderate Recreation Zone (main channel Arcola sandbar to north Stillwater). On weekends with nice weather between July 4th and mid-August, this number is approximately 29 camps in 6 river miles. The 4th of July weekend can have even more campers. On these weekends, the number of campers in this zone exceeds what would be considered “moderate” recreation levels, particularly on Mile Long Island, where crowding often consists of hull to hull boats along the length of the island. This high use is occurring approximately 7 out of the 18 weekends, or 38% of the weekends during the recreation season. This level of crowding infringes on the ability of visitors to find moderate opportunities for solitude as intended in this water management area.

The main channel from Taylors Falls/St. Croix Falls to Arcola sandbar is in the “Quiet Waters” management area. The number of campers in this stretch of river is *generally* consistent with the intended experience of finding moderate opportunities for solitude. The exception is on Swing Bridge Island and the sandbars just upstream (approximately river mile 41), where large groups of people regularly congregate and camp on nice summer weekends. Based on inventories conducted by NPS staff and volunteers the number of people camping in this area can be near 30. Reports from park neighbors indicate that this number can be far exceeded.

The backwater areas from Taylors Falls/St. Croix Falls to north Stillwater are in the “Natural Waters” management area. Based on few signs of disturbance, camping use is low in most of these backwaters. Therefore, the number of campers in the backwaters is, for the most part, consistent with the intended experience of a sense of peace and quiet and opportunities for solitude. The exception would again be in the backwater along the Wisconsin side of Swing Bridge Island (downstream of river mile 41), where large numbers of people often congregate and camp.

The recreational use survey provides a picture of the social issues related to camping under the No Action Alternative. As shown in Table 3 in Section 4.1 and the results of public scoping, the following have been reported as moderate to serious problems 1) people littering on islands and shorelines; 2) the presence of human body waste

(feces) and toilet paper; 3) people leaving camping and other equipment unattended to hold a site for later use; and 4) not being able to find a place to camp for the night. A greater percentage of people reported these issues as problems in Zone 3 (Arcola sandbar to north Stillwater) than Zone 1 (Taylors Falls/St. Croix Falls to Osceola) or Zone 2 (Osceola to Arcola sandbar).

Cumulative Impacts -- Cumulative impacts on the recreational experience can occur from conflicts with other recreational users, including day-users and campers, as well as from noise from nearby developments such as highways, residences, and businesses. Under the No Action Alternative camping would increase cumulative impacts and it would be expected to increase with increased population in the area.

Conclusion – The No Action Alternative is having moderate, long-term impacts on the intended recreational experience. The camping experience is incompatible with the definition of the “water management areas” in some areas during peak use times and occurs 30% or more of the recreation season weekends. Existing management strategies address camping related social issues to some degree, through providing information on the carry-in, carry-out policy, the need to bury human waste, and limitations on the length-of-stay. This information is available on the Riverway website and in park brochures. However, visitors do not always obtain this information before camping. Litter, human body waste, and leaving equipment to “hold” sites are still being reported as considerable problems.

5.1.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Recreational Use and Experience – Under Alternative 2a, designated campsites would be provided along the main channel. Backwater camping would also be provided for in some backwater “zones.” Overnight tie-ups would also be allowed for self-contained boats outside of designated campsites with certain restrictions on shoreline use.

Table 6 compares the number of designated campsites that would be provided per stretch of river with the recorded range of camping demand.

TABLE 6: Proposed Designated Sites / Recorded Range of Camping Demand

River Segment	Number of Proposed Campsites	Recorded Number of Camps	Number of Surveys
Interstate Landing to Osceola Landing	5 (plus existing 7 at Eagle’s Nest)	3-4 (number at Eagle’s Nest not recorded)	4
Osceola Landing to Log House Landing	7	6-15	6
Log House to Marine	2	0-1	3
Marine to Arcola	2	5	1

Arcola sandbar to Stillwater	22	6-19*	9
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* Highest levels of use occur during the middle of the summer on nice weekends when there are up to 29 camps. The number of camps on the 4th of July weekend can exceed 29 (Personal Communication, 2006).

The number of surveys is fairly small. However, anecdotal evidence suggests that the campsite numbers are fairly representative of current use on the Lower Riverway. The exception is likely an underestimate of the numbers of campers between Osceola Landing and Log House Landing. The large congregations of campers reported on Swing Bridge Island and the sandbars just upstream would push these numbers upward. Based on observation and reports from neighbors, many of the overnight visitors to the Swing Bridge area are involved in large, noisy, overnight parties involving the consumption of large quantities of alcohol, which is not consistent with the intended primitive camping experience.

Under Alternative 2a the number and distribution of campsites and the opportunity for overnight tie-ups in the “Moderate Recreation” management area between Arcola sandbar and north Stillwater would allow for moderate social interaction while preserving some locations where campers can find moderate opportunities for solitude. The number and distribution of campsites on the main channel between St. Croix Falls/Taylor’s Falls and the Arcola Sandbar and the group size limits are compatible with the “Quiet Waters” management zone and would reduce the incompatible “party” activity that takes place on and near Swing Bridge Island. The proposed maximum group size of 8 for individual campsites is within the range of average group size reported on the Federally-administered zone (Dalton, 1996).

In the backwater areas, the allowable numbers, spacing, group size limits, and one-night stay limit is consistent with the “Natural Waters” management zone where a sense of a remote, backwater experience is to be preserved. Providing backwater “zone” camping would also allow users some flexibility in choosing locations to camp.

As seen under the No Action Alternative, “zone” camping makes it difficult to effectively manage numbers of campers. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space. Without a permit system, the number of camping parties in the backwaters could exceed the intended number and be inconsistent with the intended recreational experience.

The overnight use pass would ensure that all overnight users are informed of applicable rules and regulations. They would know that they must camp in designated campsites; be spaced out-of-sight of one another in backwater zones; bring their own toilet; have no more than 8 people in individual sites, 16 people in group sites, and 6 people in backwater zones; and the stay is 3 nights in designated campsites or 1 night in backwater zones. Enforcement with the regulations would be through Park Ranger observation, warnings, and ticketing, as necessary.

One problem that could arise if demand exceeds supply is that campers could find that no designated campsite is available and no camping space is available in the backwater zones. This may be more problematic between St. Croix Falls/Taylor's Falls and the Soo Line High Bridge, where there are more canoe/kayak campers than below the Soo Line Bridge. These prospective campers would not only be disappointed, they would find it difficult or impossible to continue travel to their take-out point or back to their put-in point. Below the Soo Line High Bridge, the travel may be less of a problem, though there would still be disappointment over the inability to camp. Most campers in this stretch are motor boaters. If a designated campsite is not available, it would be relatively easy for them to return to their launch point or marina. Self-contained boats could also tie-up for the night, as long as they maintain the 100-foot distance requirement.

Cumulative Impacts -- Cumulative impacts on camping as a recreational experience can occur from conflicts with other recreational users and from disruption from nearby developments such as highways, residences, and businesses. Alternative 2a would reduce the cumulative impacts contributed by camping by managing it to be more compatible with the intended recreational experience.

Conclusion – Under Alternative 2a the camping provided for in the various “water management areas” would be compatible with their definition and compatible with the CMP goal of providing a diversity of camping experiences along the Lower Riverway. The overnight use pass would address camping related societal issues by ensuring that all overnight users are aware of the rules and regulations related to overnight stays and related recreational activities. So long as the pass system is honored and demand for designated campsites and space in the backwater zones does not exceed supply, the impacts of Alternative 2a on the intended recreational experience would be minor. However, if demand exceeds supply, impacts would increase.

5.1.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Recreational Use and Experience – Alternative 2b would be similar to 2a with the exception that camping demand would be managed so that demand does not exceed the supply of designated campsites or space in the backwater zones. The overnight permit or reservation system contemplated under this alternative could have positive or negative impacts on recreational users, depending on their particular perspective on pre-planning camping trips. According to a study completed by the Minnesota Department of Natural Resources, 49% of canoe/kayakers who have camped on a Minnesota “Canoeing and Boating River” (which includes the St. Croix) would like to do this type of camping more often (MnDNR, 2005). The leading barriers are related to the availability of campsites; no way to guarantee (such as through a reservation) that a water-accessible campsite

will be available (31%) and water-accessible campsites are too full (14%). These potential users may see an overnight permit or reservation system on the Lower St. Croix as having a positive impact.

On the other hand, as discovered through public scoping, many repeat campers on the Lower St. Croix enjoy the existing system of first-come, first-serve allocation. It allows for spontaneous camping trips with little advance planning. For these users, the impacts of a permit or reservation system may be perceived as negative.

The permit or reservation system would include a description of applicable rules and regulations. In addition, a permit or reservation holder's name would be required as the responsible party. This may provide additional incentive to adhere to Riverway rules and regulations.

There would be some potential for canoe/kayakers to paddle past designated campsites in their permitted stretch of river (under an overnight permit system) or past their reserved campsite (under a campsite reservation system). These persons may be forced to share a designated campsite with another party, possibly exceeding group size limits, or camp in an undesignated area. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

Enforcement of the system would be through observation and verbal contacts. Park Rangers would use discretion in issuing warnings and tickets.

Cumulative Impacts – Similar to 2a. The potential for cumulative impacts from demand exceeding supply is eliminated.

Conclusion – Alternative 2b would have minor, short-term impacts on the recreational experience. The camping experience provided would be compatible with the definition of the “water management areas” and management strategies would address all four of the camping related social problems. If visitors inadvertently paddle past their reserved campsite, the impacts from more than one party sharing a campsite or being forced to camp in undesignated locations would be short-term and localized.

5.1.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Recreational Use and Experience – Similar to 2a. The number and distribution of campsites in the “Moderate Recreation,” and “Quiet Waters” management areas would be compatible with the definition of each. The number of designated backwater campsites provided in the “Natural Waters” management zone would be consistent with providing a sense of a remote, backwater experience. The small number of backwater campsites would be managed under a

reservation system through NPS staff. This would eliminate the potential impact of Alternative 2a, where the number and size of overnight parties in the backwater zones could exceed the intended number. All other designated campsites (main channel) would remain first-come, first-serve.

The overnight use pass would ensure that all overnight users are informed of applicable rules and regulations. These would include the fact that they must camp in designated campsites, whether on the main channel or in the backwaters; that they must bring their own toilet; that group size is limited to 8 people in individuals sites, 16 people in group sites, and 6 people in backwater campsites; and the length-of-stay is 3 nights in designated campsites on the main channel, and one night in backwater campsites.

Cumulative Impacts – Cumulative impacts on the recreational experience can occur from conflicts with other recreational users and from disruption from nearby developments such as highways, residences, and businesses. Alternative 3a would reduce the cumulative impacts contributed by camping by managing it to be compatible with the intended recreational experience.

Conclusion -- Under Alternative 3a the camping experience provided for in the various “water management areas” would be compatible with their purpose and compatible with the CMP goal of providing a diversity of camping experiences along the Lower Riverway. The “overnight use pass” would address camping related social issues by ensuring that all overnight users are aware of the rules and regulations related to overnight stays and other recreational activities. So long as the overnight pass system is honored and demand for designated main channel campsites does not exceed supply, the impacts of Alternative 3a on the intended recreational experience would be minor. However, if demand exceeds supply, impacts would increase.

5.1.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Recreational Use and Experience – Alternative 3b would be similar to 3a with the exception that demand for designated campsites on the main channel, as well as in the backwaters, would be managed through an overnight permit or reservation system. The permit or reservation system would include a description of applicable rules and regulations. In addition, a permit or reservation holder’s name would be required as the responsible party. This may provide additional incentive to adhere to Riverway rules.

There would be some potential for canoe/kayakers to travel past designated campsites in their permitted stretch of river (under an overnight permit system) or past their reserved campsite (under a campsite reservation system). These persons may need to share a designated campsite with another party or camp in an

undesigned area. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

As described under Alternative 2b, the permit / reservation system could be seen to have positive or negative impacts depending on the person's particular perspective about pre-planning camping trips.

Enforcement of the system would be through observation and verbal contacts. Park Rangers would exercise discretion in issuing warnings and tickets.

Cumulative Impacts – Similar to 3a. The potential for cumulative impacts from demand exceeding supply is eliminated.

Conclusion -- Alternative 3b would have minor, short-term impacts. The camping experience provided would be compatible with the definition of the “water management areas” and management strategies would address all four of the camping related social problems. Impacts from more than one party sharing a campsite or being forced to camp in undesigned locations would be short-term and localized.

5.1.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Recreational Use and Experience – Under this alternative, there would be no designated campsites established or tent camping allowed in the “Moderate Recreation Zone” below Arcola sandbar. Overnight stays would be limited to tie-ups for self-contained boats. This alternative would have a positive impact on visitors in self-contained boats by making more areas available for their use on this stretch. It would have a negative impact on visitors who have traditionally or would like to tent camp on this stretch. Because only boat-tie-ups would be allowed, the number of people staying overnight may be lower than in the other alternatives; or it may simply provide more room for more boat tie-ups. The alternative remains consistent with the definition of a “Moderate Recreation Zone.”

The number and distribution of designated campsites above Arcola sandbar is compatible with the definition of the “Quiet Waters” management zone. There would be no camping in the backwaters, which would be consistent with providing a remote, backwater experience for day users.

The overnight use pass would ensure that all overnight users are informed of applicable rules and regulations. These would include the fact that they must camp in designated campsites; they must bring their own toilet; group size is limited to 6 people in individual sites, 7-12 people in group sites, and 2 boats together at tie-ups; and the length-of-stay is 3 consecutive nights whether in a designated campsites or in one location as a boat tie-up.

Cumulative Impacts – Cumulative impacts on the recreational experience can occur from conflicts with other recreational users and from disruption from nearby developments such as highways, residences, and businesses. Alternative 4a would reduce the cumulative impacts contributed by camping by managing it to be compatible with the intended recreational experience.

Conclusion -- Under Alternative 4a the camping experience provided for in each of the “water management areas” would be compatible with their definition and compatible with the CMP goal of providing a diversity of camping experiences along the Lower Riverway. The overnight use pass would address camping related social issues by insuring that all overnight users are aware of the rules and regulations related to overnight stays and other recreational activities. So long as the overnight pass system is honored and demand for designated main channel campsites does not exceed supply, the impacts of Alternative 4a on the intended recreational experience would be minor. However, if demand exceeds supply, impacts would increase.

5.1.8 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Tie-ups, Permit / Reservation System

Analysis of Impacts on Recreational Use and Experience – Alternative 4b would be similar to 4a with the exception that demand for designated campsites would be managed through an overnight permit or reservation system so that demand would not exceed the supply. The permit or reservation system would include a description of applicable rules and regulations. In addition, a permit or reservation holder’s name would be required as the responsible party. This may provide additional incentive to adhere to Riverway rules.

There would be some potential for canoe/kayakers to travel past designated campsites in their permitted stretch of river (under an overnight permit system) or past their reserved campsite (under a campsite reservation system). These persons may need to share a designated campsite with another party or camp in an undesignated area. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

Enforcement of the system would be through observation and verbal contacts. Law enforcement rangers would use discretion in issuing warnings and tickets.

Cumulative Impacts – Similar to 4a. The potential for cumulative impacts from demand exceeding supply is eliminated.

Conclusion -- Alternative 4b would have minor, short-term impacts. The camping experience provided would be compatible with the definition of the “water management areas” and management strategies would address all four of the camping related social problems. Impacts from more than one party sharing one

campsite or parties being forced to camp in undesignated locations would be short-term and localized.

5.2 Park Neighbors

5.2.1 Methodology

The impact analysis focuses on two aspects related to the interaction between campers and park neighbors on the Lower Riverway: 1) the compatibility of each alternative with the vision statement from the Cooperative Management Plan which states, in part, that “this is an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other;” and 2) how well each alternative addresses the conflicts reported in the residential property owner survey described in Section 4.2.

The conflicts with Riverway users reported in the residential property owner survey include:

- People being noisy on islands and shorelines after dark;
- People littering on islands and shorelines;
- Presence of human body waste (feces) and toilet paper on islands and shorelines;
- People drinking alcoholic beverages on islands and shorelines;
- People trespassing on private property along the river.

Basis of Analysis – The Cooperative Management Plan, the product of a 6-year public planning process, was prepared to guide management of the Lower Riverway over the next 15-20 years. The vision statement was developed as a target for future management decisions. Decisions about future management of the Lower Riverway should be consistent with the CMP and meet the spirit and intent of the vision statement.

Definitions of Intensity, Duration, and Type of Impact

Minor – Camping is managed in a manner that minimizes conflicts between Riverway campers and landowners. Management strategies address all five of the issues related to conflicts between campers and park neighbors. Any incompatible activity is short-term and localized.

Moderate – Camping is managed in a manner that does not minimize conflicts between campers and landowners. Management strategies address issues related to conflicts between campers and park neighbors to a degree, but not to the extent that they are not reported as moderate to serious problems. Incompatible activity is relatively localized but long-term.

Major – Camping is managed in a way that does not minimize conflicts between campers and park neighbors. Management strategies do not address issues related to conflicts between campers and park neighbors. Incompatible activity is widespread and long-term.

Duration –

- *Short-term:* Activity that is incompatible, but easily corrected by an informational or enforcement contact.
- *Long-term:* Activity that is incompatible, recurring, and not easily corrected by ranger contact due to ineffective management strategies.

5.2.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts on Park Neighbors -- The residential property owner survey provides a picture of the level of conflict between recreational users (some, but not all, of which are campers) and park neighbors under the No Action Alternative. As shown in Table 5 and from the results of public scoping, people being noisy on islands and shorelines after dark, people littering on islands and shorelines, presence of human body waste (feces) and toilet paper on islands and shorelines, people drinking alcoholic beverages on islands and shorelines, and people trespassing on private property along the river were all reported as moderate to serious problems. The results of public scoping indicate that these conflicts are fairly localized and most problematic near Franconia, Minnesota, and Swing Bridge Island. In addition, observation shows that camping is taking place on the St. Croix Islands Wildlife Area, an area administered by the Wisconsin Department of Natural Resources for wildlife breeding, rearing, feeding and resting. Camping is not allowed on the wildlife area.

Cumulative Impacts – Cumulative impacts on park neighbors can occur from conflicts with other recreational users (such as day users) and from disruption from nearby developments such as highways and other residences. Under the No Action Alternative the cumulative impacts to park neighbors contributed by camping would be expected to increase with increased population in the area and increased river use.

Conclusion -- The No Action Alternative is having moderate, long-term impacts on park neighbors. It does not meet the vision statement that the Lower Riverway be an area of minimal conflicts and mutual respect. Camping management does not minimize conflicts with park neighbors. Existing management strategies address conflicts between campers and park neighbors to some degree through providing information on the carry-in, carry-out policy; on burying human waste; by establishing zones that are closed to camping near villages and towns; and establishing quiet hours. However, visitors are not required to pick up this information before camping. The existing strategies do not effectively minimize conflicts between campers and park neighbors. Incompatible activity is localized, but long-term as they are not effectively corrected through an informational or enforcement contact.

5.2.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Park Neighbors – Under Alternative 2a, approximately 45 designated campsites would be provided within the Federally-administered zone. Backwater “zone” camping would also be provided in the backwater zones. The locations for designated campsites were selected, in part, to minimize conflicts between campers and private landowners. Since visitors would be directed to camp in the designated campsites, trespass and noise intrusion onto private property by campers would be minimized.

Much of the land in the backwaters is in NPS ownership, however, some remains in private ownership and some adjacent backwaters are part of the St. Croix Island Wildlife Area, which does not allow camping. Maps would be available with the overnight use pass for backwater campers to minimize the likelihood that they would camp on private land or on the wildlife area. However, as seen under the No Action Alternative, it is difficult to effectively manage numbers under “zone” camping. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in these zones. Without a permit system, the number of camping parties in the backwaters could exceed the intended number and create conflicts with private owners and state lands where these lands are adjacent to the backwater areas.

The overnight boat tie-ups also carry some potential to impact park neighbors. However, impacts would be minimized by the fact that most of this activity would occur below the Arcola sandbar where water depths are deep enough to accommodate self-contained boats such as houseboats and cabin cruisers. Impacts would be further minimized by the restrictions on shoreline use (no tents, picnic tables, etc.) and the overnight use pass.

Group size limits (8 for designated individual sites, 16 for group sites, 6 for backwater camping, and 2 boats together at tie-ups) would minimize the noise often associated with large groups, especially those involved in late night parties. The requirement that all overnight users be in possession of an overnight use pass which would inform them of all camping related regulations would also minimize conflicts by ensuring that campers are well-informed and, therefore, more accountable for adhering to the regulations.

Cumulative Impacts -- Cumulative impacts on park neighbors can occur from conflicts with recreational uses other than camping, such as day use, and from disruption from nearby developments such as highways and residences. Alternative 2a would reduce the cumulative impacts contributed by camping by managing it to minimize conflicts with park neighbors.

Conclusion – Alternative 2a would have minor impacts on park neighbors, as long as the system is honored and demand for designated main channel campsites and space in the backwater zones does not exceed supply. Alternative 2a would help meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Management strategies would address all five camping / private landowner related conflicts. However, if demand exceeds the supply of designated campsites or space in the backwater zones, impacts to park neighbors would increase.

5.2.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Park Neighbors – Alternative 2b would be similar to 2a with the exception that camping demand would be managed so that demand would not exceed the supply of designated campsites or space in the backwater zones. All campers would need to acquire an overnight use permit or a campsite reservation before camping. The name of the person responsible for the camping trip would be provided through the advance permit or reservation service. This alternative would further reduce impacts to park neighbors by ensuring that demand does not exceed supply of campsites and by providing the name of the responsible party in advance of camping. It is possible that canoe/kayakers could inadvertently paddle past their permitted section of river or reserved campsite. In these cases, they may be forced to share a campsite with another group or camp in an undesignated location. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

Enforcement would be through observation, warnings, and ticketing as necessary.

Cumulative Impacts – Similar to 2a. The potential for cumulative impacts from demand exceeding supply is eliminated.

Conclusion – Alternative 2b would have minor, short-term impacts on park neighbors. Camping management would help meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Management strategies would address all five camping / private landowner related conflicts. Impacts to park neighbors from several parties sharing one campsite or parties being forced to camp in undesignated locations would be short-term and localized.

5.2.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Park Neighbors – The impacts would be similar to 2a. However, this alternative would further minimize impacts to park neighbors by eliminating the ambiguity related to backwater “zone” camping. Campers would be required to stay in a designated campsite whether on the main channel or in a backwater area. Reservations would be required for the backwater sites.

Cumulative Impacts -- Cumulative impacts on park neighbors can occur from conflicts with other recreational uses, such as day users, and from disruption from nearby developments such as highways and residences. Alternative 3a would reduce the cumulative impacts contributed by camping by managing it to minimize conflicts with park neighbors.

Conclusion -- Alternative 3a would have minor impacts on park neighbors, so long as the system is honored and demand for designated main channel campsites does not exceed supply. The small number of backwater campsites would be managed by a reservation system through NPS staff at the Riverway. Camping management would help meet the vision for the Lower Riverway to be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” All parties staying overnight would be required to be in possession of an overnight use pass to assure that they are informed of rules and regulations, and therefore, more accountable for them. Management strategies would address all five camping / private landowner related conflicts. If demand exceeds supply of designated campsites, impacts would increase.

5.2.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Park Neighbors – Alternative 3b would be similar to 3a with the exception that demand for designated campsites on the main channel, as well as in the backwaters, would be managed through an overnight permit or reservation system so that demand does not exceed the supply of designated campsites. The permit or reservation system would include a description of all applicable rules and regulations. In addition, a permit or reservation holders name would be required as the responsible party. This may provide additional incentive to adhere to Riverway rules.

There would be some potential for canoe/kayakers to travel past designated campsites in their permitted stretch of river (under an overnight permit system) or past their reserved campsite (under a campsite reservation system). These persons may need to share a designated campsite with another party or camp in an undesignated area. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

Cumulative Impacts – Similar to 3a. Alternative 3b would further reduce cumulative impacts to park neighbors by insuring that demand does not exceed supply of campsites.

Conclusion -- Alternative 3b would have minor, short-term impacts to park neighbors. Camping management would help meet the vision statement that the Lower Riverway be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Management strategies would address all five camping / private landowner related conflicts. Impacts to park neighbors from more than one party sharing a campsite or being forced to camp in undesignated locations would be short-term and localized.

5.2.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Park Neighbors – Under this alternative, there would be no tent camping in the “Moderate Recreation Zone” between Arcola sandbar and north Stillwater. Overnight stays in this stretch of river would be limited to boat tie-ups only. Because only self-contained boat-tie-ups would be allowed, the number of people staying overnight may be lower than in the other alternatives; or it may simply provide more room for more boat tie-ups. There would be no camping whatsoever in the backwaters, which may further reduce impacts to park neighbors adjacent to the backwaters. Group size limits would also be smaller. The overnight use pass would ensure that all are informed of applicable rules and regulations, and therefore, more accountable to adhering to them.

Cumulative Impacts – Cumulative impacts on the recreational experience can occur from conflicts with other recreational users and from disruption from nearby developments such as highways, residences, and businesses. Alternative 4a would reduce the cumulative impacts contributed by camping by managing it to be compatible with the intended recreational experience.

Conclusion – Impacts would be similar to 3a. Impacts may be further reduced if eliminating tent camping below Arcola sandbar results in reducing numbers and/or noise from overnight stays. Any minimal impacts from the backwater camping allowed under Alternative 3a would also be eliminated. Impacts would be minor so long as demand does not exceed supply for designated campsites.

5.1.8 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Advance Allocation System

Analysis of Impacts on Park Neighbors – Alternative 4b would be similar to 4a with the exception that demand for designated campsites would be managed through

an overnight permit or reservation system so that demand would not exceed the supply. The permit or reservation system would include a description of applicable rules and regulations. In addition, a permit or reservation holders name would be required as the responsible party. This may provide additional incentive to adhere to Riverway rules.

There would be some potential for canoe/kayakers to travel past designated campsites in their permitted stretch of river (under an overnight permit system) or past their reserved campsite (under a campsite reservation system). These persons may need to share a designated campsite with another party or camp in an undesignated area. Motor boaters would not have this problem as they could travel back upstream to their permitted stretch of river or their reserved campsite.

Enforcement of the system would be through observation and verbal contacts. Park Rangers would use discretion in issuing warnings and tickets.

Cumulative Impacts – Similar to 4a. The potential for cumulative impacts from demand exceeding supply is eliminated.

Conclusion -- Alternative 4b would have minor, short-term impacts. Camping management would help meet the vision for the Lower Riverway to be “an area of minimal conflicts, with riverway users, landowners, and managers working together and respecting each other.” Management strategies would address all five camping / private landowner related conflicts. Impacts to park neighbors from more than one party sharing one campsite or parties being forced to camp in undesignated locations would be short-term and localized.

5.3 Public Health

5.3.1 Methodology

The impact analysis focuses on conformance of the alternatives with the NPS sanitation guidelines (NPS, 2004, Reference H). The guidelines state that in “environmentally sensitive areas such as river corridors, human feces and other solid waste shall be transported to an approved offsite disposal facility unless fixed facilities, which conform to all applicable rules and regulations, are available onsite.” As described in Section 4.3, the applicable rule is 36 CFR § 2.14. It states that in non-developed areas, human waste (feces) must be buried at least 6 inches under the ground, 100 feet or more from a water source or high water mark of any body of water.

Basis of Analysis – Human body waste (feces) is a potential public health concern because it contains fecal coliform, a bacteria that may also indicate the presence of other pathogenic bacteria. Body contact with water containing high levels of fecal coliform bacteria increases the chance of developing illness (fever, nausea, stomach cramps) from pathogens entering the body through the mouth, nose, ears, or cuts in the skin. Diseases and illnesses that can

be contracted in water with a high fecal coliform count include typhoid fever, hepatitis, gastroenteritis, dysentery and ear infections (<http://bcn.boulder.co.us/basin/data/FECAL/info/FColi.html>).

It is important that disease prevention measures be implemented in the national parks. The basic principals are the same in primitive areas as in developed areas. Regardless of location, there is a need to control the growth of disease causing microorganisms by properly disposing of human waste.

Definitions of Intensity, Duration, and Type of Impact

Minor – Disease prevention measures related to disposal of human waste are effective and in conformance with NPS sanitation guidelines. Human waste is transported off-site to an approved disposal facility unless fixed facilities which conform to applicable regulations are available at the campsite. Any non-conformance with human waste disposal regulations is localized and uncommon.

Moderate – Disease prevention measures related to disposal of human waste (feces) are ineffective. Human waste is not being handled in conformance with applicable rules and regulations. Non-conformance with human waste disposal regulations is commonplace. However, no reports of illnesses result.

Major – Disease prevention measures are ineffective. Human waste is not being handled in conformance with applicable rules and regulations. Non-conformance with human waste disposal regulations is widespread and commonplace. Confirmed reports of illnesses result.

5.3.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts to Public Health -- The current risk to public health is represented by the recreational user survey, the residential property owner survey, NPS staff inspections and clean-up of camping areas, and the results of public scoping. All have identified the presence of human body waste (feces) and toilet paper on islands and shorelines as a common problem. In many popular camping locations, such as the islands, it is not possible to find a location to bury waste 100 feet or more from the water without boating to the riverbank. In many cases, waste is not being buried. Many of the island and shoreline locations are subject to annual or even more frequent floods.

Cumulative Impacts – Cumulative impacts to public health can arise from run-off of fecal coliform from within the river corridor and the watershed. Sources include domestic animals, wild animals, and humans. Alternative 1: No Action adds to these impacts through improper disposal of human waste (feces) by campers. Cumulative

impacts would be expected to increase as nearby population and camping pressure increases.

Conclusion -- The No Action Alternative is having moderate impacts. Disease prevention measures related to disposal of human waste (feces) are ineffective. Human waste is not being handled in conformance with applicable rules and regulations. Non-conformance with human waste disposal regulations is commonplace. These impacts occur each recreation season under the existing management strategy. However, there have been no reports of illness as a result.

5.3.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Public Health – Because the nature of camping on the Lower Riverway involves camping on narrow islands within the floodplain, it is not possible to provide fixed toilet facilities which would conform to the applicable regulations. Therefore, Alternative 2a (and all action alternatives) would require that overnight users possess and use portable, carry-in, carry-out toilets or use onboard toilets on self-contained boats. The overnight use pass, which all overnight users would be required to have, would inform them of this and all other pertinent Riverway regulations. Enforcement of the system would be through verbal contacts, warnings and ticketing as necessary.

Cumulative Impacts – Cumulative impacts to public health can arise from run-off of fecal coliform from within the river corridor and the watershed. Sources include domestic animals, wild animals, and humans. Alternative 2a would reduce cumulative impacts by requiring that campers remove human waste in carry-in, carry-out or onboard toilets. This would reduce the threat to public health arising from camping and improper disposal of human waste.

Conclusion – Alternative 2a would have a positive impact compared to the no action alternative by reducing the level of impact to minor. Disease prevention measures related to disposal of human waste would be effective and in conformance with NPS sanitation guidelines. Human waste would be transported off-site to an approved disposal facility unless fixed facilities which conform to applicable regulations are available at the campsite (such as at Eagle’s Nest). There may be some cases of non-conformance with human waste disposal regulations, but they would be localized and uncommon.

5.3.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Public Health – Same as 2a.

Cumulative Impacts – Same as 2a

Conclusion – Same as 2a

5.3.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Public Health – Same as 2a.

Cumulative Impacts – Same as 2a.

Conclusion – Same as 2a.

5.3.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Public Health - Same as 2a.

Cumulative Impacts - Same as 2a.

Conclusion - Same as 2a.

5.3.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Public Health – Same as 2a.

Cumulative Impacts – Same as 2a.

Conclusion – Same as 2a.

5.3.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Public Health – Same as 2a.

Cumulative Impacts – Same as 2a.

Conclusion – Same as 2a.

5.4 Vegetation

5.4.1 Methodology

Vegetation forms the basis of ecosystems, providing protection for soils and food and cover for animals. It is also a key component of the scenic value of the islands, shorelines and river bluffs that make up the Lower Riverway. The NPS *Management Policies* state that the NPS will seek to maintain native plant life as part of natural ecosystems by minimizing human impacts on native plants. This impact analysis focuses on the compatibility of each camping management alternative with the NPS policy for perpetuating native vegetation.

Basis of Analysis -- Camping can impact vegetation through clearing to establish designated campsites and through trampling from foot traffic. Occasional tree damage and cutting can also occur from campers collecting firewood. If trampling is heavy enough to kill vegetation and denude areas, soils become more vulnerable to erosion and to invasion by exotic plant species. Continued soil erosion eventually undermines the substrate that supports vegetation, and trees and other plants are lost.

Definitions of Intensity, Duration, and Type of Impact

Minor – Vegetation loss and bare soil is limited to the primary use areas of campsites, around the fire ring, eating area, and access point (6-25% of site shows exposed soil). Mitigation measures are easily implemented and effective.

Moderate – Vegetation loss and bare soil is more widespread through camping area (26-50% of site shows exposed soil). Tree roots are not exposed. Mitigation measures are difficult to implement due to the inability to limit camping impacts to specific areas.

Major – Vegetation loss is severe (50 -100% of site shows exposed soil); soil erosion is obvious in comparison with offsite areas, as indicated by exposed tree roots. Trees are lost. Mitigation measures are not effective due to crowding and the inability to limit camping impacts to specific areas and/or close camping locations for rest and restoration.

Duration –

- *Short-term:* An effect that within a short period of time would no longer be detectable as the resource is returned to its pre-disturbance condition or appearance, generally less than 3 years.
- *Long-term:* A change in a resource or its condition that does not return to pre-disturbance condition or appearance within 3 years or for all practical purposes is considered permanent.

5.4.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts on Vegetation – Studies, baseline condition assessments, and casual observation all indicate that the No Action Alternative is having adverse effects to vegetation. The study of aerial photographs described in Section 4.4 showed that forested portions of islands below Arcola sandbar have become increasingly smaller and more fragmented, whereas forested areas of islands between the Swing Bridge and Arcola sandbar have become larger and more concentrated (Pitt, David G. et al, 1999). The quantitative shoreline surveys discussed in Section 4.5 indicate that foot-traffic trampling and boat waves are major contributing factors to shoreline erosion (Griffin, Wendy et al, 2000). Both studies indicate that while natural forces such as flooding continue to shape the islands and shorelines, human induced impacts related to trampling of vegetation and boat wakes are causing loss of vegetative ground cover, the erosion of shorelines, and the loss of trees.

Trampling of vegetation can occur from both day users and campers. Camping is more concentrated between Arcola sandbar and north Stillwater than upstream. The baseline condition assessment of areas used for camping between the Arcola sandbar and north Stillwater described in Section 4.4 identified 60 distinct areas used for camping on this 6 mile stretch. Of these, 22% were ranked as being in “Condition Class 4,” with nearly complete or total loss of vegetation cover and organic litter; bare soil was widespread. Eight percent were ranked as being in Condition Class 5,” with soil erosion obvious in comparison to off site areas as indicated by exposed tree roots.

Cumulative Impacts – Vegetation at the Riverway is impacted by recreational use (trampling and erosion), fire suppression, invasive plant species, and occasional construction activities. Alternative 1: No Action would continue to have an additive negative effect on native vegetation by the trampling, denuded areas, and soil erosion associated with the open camping policy. These impacts would be expected to increase with increasing population and camping pressure in the area.

Conclusion -- Below the Soo Line High Bridge (approximately one mile below Arcola sandbar) impacts to vegetation would be considered moderate to major. Major impacts are limited to Mile Long Island, Pillar Island, and a portion of South High Bridge Island. These islands are heavily used and are also along the main navigational channel, where there is more wave action. Vegetation loss is severe, and soil erosion is obvious as indicated by exposed tree roots. Trees are being lost.

Other islands between Arcola sandbar and north Stillwater show minor to moderate impacts to vegetation. Vegetation loss and exposed soil conditions range from occurring just near the primary use areas to being more widespread fashion through the use area. However, by and large, tree roots are not exposed on these other islands. Above Arcola Sandbar, impacts to vegetation also fall into the minor to moderate range.

All impacts are long-term. Without designated campsites it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as closing campsites for rest and restoration, are not feasible on the Lower Riverway under the current policy of open camping.

Impairment -- The study preceding designation of the Lower Riverway points out the significance of the island and slough environment to the scenic values for which the Riverway was established (DOI, 1973). Vegetation is a critical component of the scenic value of the island and slough environment. In addition, the Cooperative Management Plan for the Lower Riverway identifies the landforms and geologic features, including the bluffs and islands, as exceptional resources and values. It is important that this island and slough environment be protected. At the present time, major impacts to vegetation are limited to portions of three of the major islands below Arcola sandbar. Because these impacts are relatively localized, the NPS does not believe they have crossed the threshold to impairment of vegetation at the Riverway.

5.4.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Vegetation -- Under Alternative 2a, the impact to vegetation associated with camping would be limited primarily to designated campsites. Erosion control measures, such as installing steps at access points and temporarily closing areas for rest and restoration, would be relatively easy to implement. The restrictions on overnight boat tie-ups, particularly the prohibition of fires, tents, and picnic tables as well as the group size limit of only two boats together, would minimize the impacts of overnight tie-ups on vegetation. Tree cutting for firewood would be reduced through the overnight use pass system, which would inform all overnight users that this activity is not allowed.

Impacts to vegetation in the backwater camping zones would be minimized by limiting groups to 6 people and two boats, a 1-night stay, and prohibiting campfires. However, as seen under the No Action Alternative, “zone” camping makes it difficult to effectively manage numbers. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. The number of camping parties in the backwaters could exceed the intended number and result in increased impacts to vegetation. In addition, if backwater campers use the same areas repeatedly for camping, vegetation could become denuded in those areas. This is a likely consequence as there are few areas in the backwaters suitable for camping due to extensive wetland and steep rocky areas.

Cumulative Impacts -- Vegetation at the Riverway is impacted by recreational use (trampling and erosion), fire suppression, invasive plant species, and occasional construction activities. Alternative 2a would reduce the cumulative impacts associated with camping by confining most camping related impacts to designated campsites.

Conclusion –Alternative 2a would have a positive impact compared to the no action alternative by reducing impacts to vegetation to the minor - moderate range. Vegetation loss would be limited to the primary use areas of campsites; around the fire ring, eating area, and access point. Impacts would be short-term, because mitigation measures such as installing steps at access points and closing areas for rest and restoration would be easy to implement, relative to the no action alternative. Mitigation measures, such as closing sites for rest and restoration would be taken before impacts reach major levels.

As long as demand does not exceed the intended number in the backwater zones and the same areas are not used repeatedly for camping, impacts there would be minor. However, impacts from backwater zone camping would be more difficult to mitigate as it is difficult to close “zones” for restoration.

If demand exceeds supply of designated main channel campsites or space in the backwaters, impacts would increase.

Restoration of the existing heavily impacted (denuded and eroded) areas below the Soo Line High Bridge would take a number of years to achieve. The impacts are major and long-term and would likely take 3 years or more to restore.

Impairment – Alternative 2a would not result in impairment to vegetation.

5.4.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Vegetation –The impacts of Alternative 2b would be similar to 2a. However, the impacts of demand exceeding supply of campsites or space in the backwaters would be eliminated. Impacts to backwater vegetation from repeated use of the same areas for camping could still occur. Without designated campsites in the backwaters it would not be possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as closing campsites for rest and restoration, are not easily implemented under zone camping. Tree cutting and other blatant resource damage may be further reduced as issuing overnight permits or campsite reservations would require that a name be provided for the responsible trip leader. Minor, short-term impacts could occur if canoe/kayakers travel past available campsites in their permitted stretch of river or past their reserved campsite. In these cases, they may need to share a campsite or

camp in an undesignated location. This would not be an issue for motor boaters who could easily motor back to their permitted stretch of river or reserved campsite.

Cumulative Impacts – Similar to 2a. In addition, the impacts to vegetation from demand possibly exceeding supply of campsites would be reduced.

Conclusion – The impact of Alternative 2b to vegetation on the main channel would be positive compared to the No Action Alternative because impacts would be reduced to the minor – moderate range. Vegetation loss would be limited to the primary use areas of campsites, around the fire ring, eating area, and access point. Impacts would be short-term, because mitigation measures such as installing steps at access points and closing areas for rest and restoration would be easy to implement, relative to the No Action Alternative. Mitigation measures, such as closing sites for rest and restoration would be taken before impacts reach major levels.

It is difficult to predict the impact of backwater zone camping to vegetation, if the same areas are used repeatedly for camping, and cannot be effectively closed for restoration, impacts could rise to moderate. The existing impacts on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and may take more than 3 years to restore.

Impairment -- Alternative 2b would not result in impairment to vegetation.

5.4.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Vegetation – Similar to 2a. In addition, impacts to vegetation in the backwaters would be reduced by requiring campers to stay in designated backwater campsites. These backwater campsites would be available by reservation only, and could be temporarily closed, as needed, for restoration.

Cumulative Impacts – Similar to 2a. Impacts to backwater vegetation would be further reduced.

Conclusion – As long as demand does not exceed supply of campsites, the impacts of Alternative 3a to vegetation would fall into the minor – moderate range. Vegetation loss would be limited to the primary use areas of campsites; around the fire ring, eating area, and access point. Impacts would be short-term, as mitigation measures such as installing steps at access points and temporarily closing areas for rest and restoration would be relatively easy to implement and effective. If demand exceeds supply, impacts would increase.

The existing impacts on the main navigational channel below the Soo Line High Bridge would likely remain major until restoration of heavily impacted areas is

achieved. These impacts are long-term and it may take 3 years or more for vegetation to be restored.

Impairment – Alternative 3a would not result in impairment to vegetation.

5.4.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Vegetation – Similar to 3a. Impacts to vegetation would be further reduced by managing demand so that it does not exceed supply. Tree cutting and other resource damage may be even further reduced because issuing overnight permits or campsite reservations would require that a name be provided for the responsible trip leader.

Cumulative Impacts – Similar to 3a but impacts reduced by managing demand.

Conclusion – The impact of Alternative 3b to vegetation would fall into the minor – moderate range. Vegetation loss would be limited to the primary use areas of campsites, around the fire ring, eating area, and access point. Mitigation measures would be easily implemented and effective as campsites would be available by permit or reservation only, and could be temporarily closed, as needed, for restoration. Impacts would be short-term, taking less than 3 years to recover.

The existing impacts to vegetation on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and would likely take more than 3 years to restore.

Impairment -- Alternative 3b would not result in impairment to vegetation.

5.4.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Vegetation – Similar to 3a. Impacts to vegetation would be further reduced by eliminating backwater camping; requiring smaller group sizes; and, below the Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups (with restrictions).

Cumulative Impacts – Similar to 3a. Impacts to vegetation would be further reduced by eliminating tent camping below Arcola.

Conclusion – As long as demand does not exceed supply of campsites, the impacts of Alternative 4a to vegetation would fall into the minor – moderate range. Vegetation loss would be limited to the primary use areas of campsites; around the fire ring, eating area, and access point. Impacts would be short-term, as mitigation

measures such as installing steps at access points and temporarily closing areas for rest and restoration would, relative to the No Action Alternative, be easy to implement. If demand exceeds supply, impacts would increase.

The existing impacts to vegetation on the main navigational channel below the Soo Line High Bridge would likely remain major until restoration of heavily impacted areas is achieved. These impacts are long-term and may take 3 years or more to restore. Once this area is restored, impacts from camping would fall into the minor - moderate range. Restoration may be easier to achieve under this alternative compared to the other action alternatives because tent camping would be eliminated below the Arcola sandbar, where the most heavily impacted areas are located.

Impairment -- Alternative 4a would not result in impairment to vegetation.

5.4.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Vegetation – Similar to 4a. Impacts to vegetation would be further reduced by requiring permits or reservations, thus managing demand so that it does not exceed supply of campsites. Tree cutting and other resource damage may be even further reduced because issuing overnight permits or campsite reservations would require that a name be provided for the responsible trip leader for specific campsites.

Cumulative Impacts – Similar to 4a but impacts reduced by managing camping demand with a permit or reservation system.

Conclusion – The impact of Alternative 4b to vegetation would fall into the minor – moderate range. Vegetation loss would be limited to the primary use areas of campsites, around the fire ring, eating area, and access point. Mitigation measures would be easily implemented and effective as campsites would be available by permit or reservation only, and could be temporarily closed, as needed, for restoration. Impacts would be short-term, taking less than 3 years to recover.

The existing impacts on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. While tent camping would not be allowed downstream of Arcola sandbar, the existing impacts are long-term and may take more than 3 years to restore. Restoration may be easier to achieve under this alternative compared to the other action alternatives by eliminated tent camping below Arcola sandbar.

Impairment -- Alternative 4b would not result in impairment to vegetation.

5.5 Soils

5.5.1 Methodology

The NPS *Management Policies* state that the NPS will actively seek to understand and preserve the soil resources of parks and prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources. The soils impact analysis is focused on how well each alternative meets these goals.

Basis of Analysis -- Soils can be negatively impacted by island and shoreline recreational activities, including camping and day use. By its very nature, terrestrial recreation tramples vegetation. Recurring use of popular areas can eventually denude areas of vegetation, which exposes soil, and leaves it vulnerable to erosion (DOI, 1991). Erosion can be either a natural process brought about by such things as flooding, ice scour, river currents, and wind-driven waves; or it can be brought about or accelerated by human activity such as boat wakes and heavy use of areas which tramples and destroys vegetation. In addition to its impact on soils, erosion can impact water quality, vegetation, wildlife, scenic values, and cultural resources. Impacts to these other resource topics are discussed in the corresponding section of this EA.

Definitions of Intensity, Duration, and Type of Impact –

Minor – Camping and overnight tie-up areas show low erosion. They are well vegetated with both ground cover and overhead canopy; vegetation loss and bare soil is limited to primary use areas; there is little or no evidence of erosion. Tree roots are not exposed.

Moderate – Camping and over night tie-up areas show some evidence of erosion. Vegetation loss is more widespread through the area; some exposed roots are evident.

Major – Camping and overnight tie-up areas show high erosion. There is little or no ground cover, bare soil is widespread; high erosion as shown by exposed tree root wads.

Duration --

- *Short-term:* An effect on soils that is relatively easy to mitigate and would restore stability to the site within 3 years or less.
- *Long-term:* An effect on soils that is long-term, taking more than 3 years to restore, or, for all practical purposes, where damage is permanent.

5.5.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts to Soils – A picture of the impact that the No Action Alternative is having to soils is provided by several studies; the baseline condition assessment of campsites described in Section 4.4 and the qualitative assessment and quantitative survey of the erosion condition of islands and shorelines described in Section 4.5. The baseline condition assessment of areas used for camping between the Arcola sandbar and north Stillwater described in Section 4.4 above identified 60 distinct areas used for camping on this 6 mile stretch. Of these, 22% were ranked as being in “Condition Class 4,” with nearly complete or total loss of vegetation cover and organic litter, and bare soil widespread. Eight percent were ranked as being in Condition Class 5,” with soil erosion obvious in comparison to off site areas as indicated by exposed tree roots. The qualitative assessment of islands and shorelines found that in the 4.5 mile stretch between the Soo Line High Bridge and north Stillwater, almost 25% of the shoreline was in the moderate to high erosion categories. Seventy-five percent was in the low erosion category. Survey sites affected by boat waves and/or foot traffic trampling experienced net erosion while sites not affected by boat waves and without foot traffic experienced net deposition.

Day use as well overnight use tramples vegetation and denudes areas, making soil more vulnerable to erosion from boat wakes and flooding. As shown by the recreational use survey described in Section 4.1, the majority of groups (58%) in the Arcola sandbar to north Stillwater stretch of river were camping when interviewed. Camping is very popular in this stretch and no doubt contributes to the erosion problem.

Erosion studies have not been conducted upstream of Arcola sandbar. However, anecdotal evidence and observation shows that areas traditionally used for camping across from Marine on St. Croix were experiencing major erosion impacts. Bare ground was widespread and root wads were, and still are, exposed. Since their closure in 1998, herbaceous vegetation has restored itself in denuded areas providing a protective cover from the forces of erosion. Other areas popular for camping along the St. Croix Falls/Taylor's Falls to Arcola sandbar stretch of river would fall into the minor to moderate erosion class.

Cumulative Impacts -- Soils at the Riverway are impacted by day use, overnight use, and construction related impacts in or near the Riverway all of which can denude areas of vegetation, leaving soils vulnerable to the forces of erosion. Under Alternative 1: No Action, cumulative impacts would be expected to increase if the increase in nearby population is accompanied by an increase in camping pressure at the Riverway.

Conclusion – Soils along popular camping areas in the main navigational channel between the Soo Line High Bridge and north Stillwater are experiencing major erosion impacts; particularly on Mile Long Island, Pillar Island, and a portion of south High Bridge Island. These impacts are long-term. Without designated campsites it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as closing campsites for

rest and restoration, are not feasible on the Lower Riverway under the current policy of open camping.

Elsewhere soil erosion in camping areas is minor to moderate. Most camping areas show little or no erosion. They are well vegetated with both ground cover and overhead canopy. Others show more bare soil. Again, these impacts are long-term. Without designated campsites it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as closing campsites for rest and restoration, are not feasible on the Lower Riverway under the current policy of open camping.

Impairment – An impact is more likely to constitute impairment to the extent that it affects a resource or value whose conservation is key to the natural integrity of the Riverway and necessary to fulfill the specific purposes identified in the Riverway’s establishing legislation. A primary purpose for establishing the Riverway was to protect its scenic values. Protection of soils is key to protecting native vegetation, natural shoreline conditions, wildlife, and the scenic value of the Riverway. As described above, major impacts to soils are occurring in the main navigation channel between the Soo Line High Bridge and north Stillwater. The impact in this area is approaching impairment levels. In other areas soil erosion impacts are minor to moderate. Taken as a whole, soils of the Lower Riverway are not currently impaired.

5.5.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Soils – Under Alternative 2a camping would likely trample vegetation and partially denude primary use areas and access points. At designated campsites, impacts could be confined and mitigation measures would be relatively easy to implement and effective. Steps could be installed to curb river bank erosion and campsites could be temporarily closed to allow them to rest. Restoration actions such as raking and seeding could be taken to help speed recovery. The restrictions on shoreline use (no erecting tents, no fires etc) at overnight boat tie-ups would minimize impacts to soils.

The 6 person/2 boat limit and 1-night stay applicable to backwater zone camping would help limit impacts to soils in these areas. However, as seen under the No Action Alternative, “zone” camping makes it difficult to effectively manage numbers. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. The number of camping parties in the backwaters could exceed the intended number and result in increased impacts to soils.

Cumulative Impacts – Soils at the Riverway are impacted by recreational day use, overnight use, and construction related impacts in or near the Riverway all of which

can denude areas of vegetation, leaving soils vulnerable to the forces of erosion. Alternative 2a would reduce cumulative impacts by confining impacts primarily to designated campsites, limiting group sizes, and implementing erosion control measures as needed.

Conclusion – As long as demand does not exceed supply of designated campsites, the impact of Alternative 2a to soils would be minor and short-term at designated campsites. Impacts in backwater zones would be more difficult to mitigate. No designated campsites would be established and it is difficult to close areas for restoration under zone camping. Existing impacts on the main navigational channel below the Soo Line High Bridge are major and long-term and would likely take more than 3 years to restore. If demand exceeds supply, impacts would occur outside of designated campsites.

Impairment – Alternative 2a would not result in impairment to soils.

5.5.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Soils – The impacts of Alternative 2b would be similar to 2a. However, the impacts from demand possibly exceeding supply of campsites would be eliminated by requiring camping permits or campsite reservations.

Cumulative Impacts – Similar to 2a but impacts further reduced by managing demand for campsites.

Conclusion – The impact of Alternative 2b to soils would be minor. Impacts would be short-term, taking less than 3 years to recover. Impacts in backwater zones would be more difficult to mitigate. No designated campsites would be established in these zones and it is difficult to close areas for restoration under zone camping. The existing impacts on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and restoration may take more than 3 years.

Impairment -- Alternative 2b would not result in impairment to soils.

5.5.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Soils – Similar to 2a except that the potential for impact to soils in the backwaters would be reduced by establishing designated backwater sites and requiring reservations for those sites.

Cumulative Impacts – Similar to 2a.

Conclusion -- As long as demand does not exceed supply of main channel campsites, the impact of Alternative 3a to soils would be minor to moderate upstream of the Soo Line High Bridge and on backchannel areas downstream. The impacts would be short-term, taking less than 3 years to recover. If demand exceeds supply, soils outside of designated sites could be impacted by use. The existing impacts on the main navigational channel below the High Bridge would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and may take more than 3 years to restore.

Impairment -- Alternative 3a would not result in impairment to soils.

5.5.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Soils -- The impacts of Alternative 3b would be similar to 3a. However, the impacts from demand possibly exceeding supply of campsites would be eliminated.

Cumulative Impacts -- Similar to 3a. In addition, the impacts from demand possibly exceeding supply of campsites would also be reduced with a permit or reservation system.

Conclusion -- The impact of Alternative 3b to soils would be minor to moderate upstream of the Soo Line High Bridge and on backchannel areas downstream. Impacts would be short-term, taking less than 3 years to recover. The existing impacts on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and may take more than 3 years to restore.

Impairment -- Alternative 3b would not result in impairment to soils.

5.5.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Soils -- Similar to 3a. Impacts to soils would be further reduced by eliminating backwater camping; requiring smaller group sizes; and, below the Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups with restrictions on shoreline use.

Cumulative Impacts -- Similar to 3a. Impacts to soils would be further reduced.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 4a would have minor, short-term impacts to soils. Soils would be protected by taking mitigating actions such as installing steps at access points and closing areas for rest and restoration if vegetation is lost and before soil erosion begins. If demand exceeds supply, impacts would increase.

The existing impacts to soils on the main navigational channel below the Soo Line High Bridge would likely remain major until restoration of heavily impacted areas is achieved. These impacts are long-term and may take 3 years or more to restore. Restoration of soils and vegetation may be easier to achieve under this alternative compared to the other action alternatives because tent camping would be eliminated below Arcola sandbar.

Impairment -- Alternative 4a would not result in impairment to soils.

5.4.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Soils – Similar to 4a. Impacts to soils would be further reduced by managing demand for designated campsites.

Cumulative Impacts – Similar to 4a, but impacts further reduced by requiring permits or reservations for designated campsites, thus managing demand so that it does not exceed supply.

Conclusion – The impact of Alternative 4b to soils would be minor. Mitigation measures would be easily implemented and effective. Impacts would be short-term, taking less than 3 years to recover. The existing impacts to soils on the main navigational channel would likely remain major until restoration of heavily impacted areas is achieved. The existing impacts are long-term and may take more than 3 years to restore. Restoration of soils may be easier to achieve under this alternative compared to the other action alternatives because tent camping would be eliminated below Arcola sandbar and demand for designated campsites would be managed so as to not exceed supply.

Impairment -- Alternative 4b would not result in impairment to soils.

5.6 Water Quality

5.6.1 Methodology

As described in Section 4.6 above, the St. Croix River has been designated by Wisconsin as an "outstanding resource water" and by Minnesota as an "outstanding resource value waters - restricted." The Wisconsin classification means that a proposed new discharge or an

increased discharge from a municipal or industrial source would not be permitted unless the effluent meets the background level in the river. Minnesota's classification means that a proposed new or increased discharge would not be allowed unless there is no prudent or feasible alternative.

The impact of camping on water quality comes from non-point, rather than point sources. The NPS *Management Policies* recognize that pollution of waters by both point and non-point sources can impair the natural functioning of aquatic ecosystems and diminish the utility of park waters for visitor use and enjoyment. High water quality is key to the quality of the recreational experience on the St. Croix, where swimming, fishing, and other water-based activities are popular. The *Management Policies* go on to state that, whenever possible, the NPS will avoid the pollution of park waters by human activities. The impact analysis focuses on how well each of the alternatives meets this guidance in the NPS *Management Policies*.

Basis for Analysis -- Camping activities can affect water quality primarily by introducing human waste during run-off and flood events and introducing sediments from soil erosion. Human waste increases nutrient input and contributes to eutrophication. Soil erosion increases sedimentation and turbidity of water.

Definitions of Intensity, Duration, and Type of Impact

Minor – Camping is managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities. Any changes in water quality as a result of camping activities are small, localized and short-term.

Moderate – Camping management is not completely effective at minimizing the potential for pollution from human activities. Changes in water quality as a result of camping activities are small and fairly localized, but long-term.

Major – Camping management does not conform to NPS policies for protecting water quality from human activities. Changes in water quality as a result of camping are measurable and widespread.

Duration –

- *Short-term*: An effect that within a short period of time would no longer be detectable, generally a few days after a rain or flood event.
- *Long-term*: An effect that persists over time, with water quality not returning to baseline conditions.

5.6.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts to Water Quality – The amount of run-off of fecal matter and sediment related to camping activity would be difficult, if not impossible, to isolate from other sources in the watershed and measure. However, as assessed in Sections 5.3 and 5.4, the current NPS to bury human waste 6 inches deep, 100 feet or more from any body of water is not followed by many and not an effective disposal method. In addition, soil erosion in areas used for camping is occurring, in some places with major impacts to soils. When the NPS policy for protecting water quality is compared to the impacts of the No Action Alternative, it is clear that more could be done to protect water quality from human activities.

Cumulative Impacts -- Water quality in the Lower Riverway is impacted by run-off of nutrients and sediments in the watershed and by point sources such as municipal and industrial discharges. The No Action Alternative adds to these impacts through sedimentation and run-off of human waste from campsites. The negative impacts of this alternative on water quality would be expected to increase as nearby population and camping pressure increases.

Conclusion – The No Action Alternative has moderate impacts on water quality. It is not as effective as it could be at minimizing the potential for pollution and does not conform to NPS policy for protecting water quality and minimizing the potential for pollution from human activities. However, actual changes in water quality as a result of camping activities would be difficult to isolate from other inputs and are likely small and fairly localized. Impacts are long-term because the customary methods of controlling impacts to water quality, such as preventing soil erosion by closing campsites for rest and restoration, are not feasible under the current policy of open camping.

Impairment – The No Action Alternative is not resulting in impairment to water quality.

5.6.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Water Quality – Under Alternative 2a, the input of human waste (feces) would be minimized by requiring all overnight users to possess and use carry-in, carry-out toilets or onboard toilet facilities. Soil erosion and sedimentation would be minimized by establishing designated campsites, providing erosion control measures at designated campsites, and allowing them to rest and restore as needed. Restrictions on shoreline use at boat tie-ups would also reduce erosion and sedimentation. All of these measures would help maintain water quality.

Cumulative Impacts -- Alternative 2a would reduce cumulative impacts by reducing the input of human waste and sediment resulting from camping activities.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 2a would have minor impacts on water quality. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities. Any changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment – Alternative 2a would not result in impairment to the water quality of the Lower Riverway.

5.6.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Water Quality –The impacts of Alternative 2b would be similar to 2a. In addition, the potential impacts from demand exceeding supply of campsites would be eliminated.

Cumulative Impacts – Similar to 2a but eliminates potential impact of demand exceeding supply of campsites.

Conclusion – Alternative 2b would have minor impacts on water quality. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities. Any changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment –Alternative 2b would not result in impairment to the water quality of the Lower Riverway.

5.6.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Water Quality – Similar to Alternative 2a. Any impacts to water quality arising from soil erosion in backwater camping “zones” would be further reduced by establishing designated backwater campsites and requiring reservations for their use.

Cumulative Impacts – Similar to Alternative 2a.

Conclusion -- So long as demand does not exceed supply of main channel campsites, Alternative 3a would have minor impacts on water quality. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities. Any

changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment -- Alternative 3a would not result in impairment to the water quality of the Lower Riverway.

5.6.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Water Quality – Similar to Alternative 3a. In addition, there would be reduced potential for impact resulting from demand exceeding supply of campsites, corresponding impacts to vegetation and soils, and subsequent erosion and sedimentation.

Cumulative Impacts – Similar to Alternative 3a with less impact from demand exceeding supply of campsites.

Conclusion -- Alternative 3b would have minor impacts on water quality. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities. Any changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment -- Alternative 3b would not result in impairment to the water quality of the Lower Riverway.

5.6.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Water Quality – Similar to 3a. Impacts to water quality may be further reduced by eliminating backwater camping; requiring smaller group sizes; and, below the Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups with shoreline use restrictions. These measures would offer more protection to vegetation and soils, and, therefore, more protection to water quality. The same measures may make restoration and stabilization of heavily eroded areas may be easier to achieve.

Cumulative Impacts – Similar to 3a. Impacts to water quality would be further reduced.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 4a would have minor, short-term impacts to water quality. Water quality would be protected by minimizing soil erosion and requiring carry-in, carry-out toilet facilities. Camping would be managed in a way that conforms to NPS policies for

protecting water quality and minimizes the potential for pollution from human activities. Any changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment -- Alternative 4a would not result in impairment to water quality.

5.6.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Water Quality – Similar to 4a. Impacts would be further reduced because the permit or reservation requirement would help limit impacts by managing demand for designated campsites.

Cumulative Impacts – Similar to 4a; impacts further reduced.

Conclusion – Alternative 4b would have minor, short-term impacts to water quality. Water quality would be protected by minimizing soil erosion and requiring carry-in, carry-out toilet facilities. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizing the potential for pollution from human activities. Any changes in water quality as a result of camping activities would be small, localized, and short-term.

Impairment -- Alternative 4b would not result in impairment to water quality.

5.7 Floodplains

5.7.1 Methodology

In compliance with Executive Order 11988, “Floodplain Management” it is NPS policy to restore and preserve natural floodplain values and minimize potentially hazardous conditions associated with flooding. The impact analysis focuses on the compatibility of each alternative with the NPS policy on floodplains.

Basis of Analysis -- Campsites along rivers can either directly or indirectly impact the natural values of floodplains, such as vegetation, soils, and native animals. Direct impacts can occur through development at designated campsites; indirect impacts can occur through use of camping areas. In addition, by their nature, canoe-in and boat-in camp sites along rivers often involve overnight occupancy of the floodplain which carries potential risks. The level of the risk depends on the “flashiness” of floodwaters or how quickly they rise.

Definitions of Intensity, Duration, and Type of Impact

Minor – Minor modification of floodplain, which has small measurable impacts on natural floodplain values; low risk to human life and property from camping in the floodplain.

Moderate – Modification to floodplain which creates a considerable measurable impact to natural floodplain values; low risk to human life and property from camping in the floodplain.

Major – Modification to floodplain which creates major impacts to natural floodplain values; measurably impacts flood elevations; high risk to human life and property from camping in the floodplain.

Duration –

- *Short-term:* An effect that within a short period of time would no longer be detectable as the resource is returned to its pre-disturbance condition or appearance, generally less than 3 years.
- *Long-term:* A change in a resource or its condition that does not return the resource to pre-disturbance condition or appearance and for all practical purposes is considered permanent.

5.7.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Floodplain Impacts -- The impacts of the No Action Alternative to natural floodplain values are discussed under the vegetation, soils, and native animal topics. To summarize, the No Action Alternative is, in general, having major to moderate impacts to vegetation and soils downstream of the Soo Line High Bridge and moderate to minor impacts upstream. It is having minor to moderate impacts to native animals.

In addition, the majority of locations where visitors choose to camp are within the 100-year floodplain. However, the safety risk to campers is low because flooding on the St. Croix River is not “flashy.” Floodwaters gradually rise, allowing campers to vacate areas before the water is too high and gradually recede, making camping spots available for use.

Cumulative Impacts -- The floodplain in the Lower Riverway is generally in good condition and well protected, except for those areas that have experienced loss of vegetation and soils. Impacts are more serious below the Soo Line High Bridge than above. The No Action Alternative would have some cumulative impact on floodplains if camping pressure grows and impacts to the natural values of the floodplain increase.

Conclusion -- The No Action Alternative is having moderate impacts to floodplains. The modification to floodplains creates a considerable measurable impact to natural floodplain values. Impacts are long-term because the customary methods of

controlling impacts to the natural values of floodplains, such as protecting vegetation and preventing soil erosion by closing campsites for rest and restoration, are not feasible under the current policy of open camping. The risk to human life and property from floodwaters is low.

Impairment -- The No Action Alternative is not resulting in impairment to floodplains.

5.7.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Floodplain Impacts -- All locations proposed for designated campsites are within the 100-year floodplain of the St. Croix River. Improvements at designated campsites would be minimal; involving the placement of a sign and fire ring, and minimal clearing of vegetation for tent sites, if necessary. Development of campsites would not affect flood elevations. The use of designated campsites would have minor impacts to the natural values of floodplains, with minor impacts to vegetation cover and soils. These impacts would be short-term, taking less than 3 years to restore.

Backwater zone camping may have some impact to natural floodplain values. As noted above, “zone” camping makes it difficult to effectively manage numbers. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. The number of camping parties in the backwaters could exceed the intended number and result in increased impact to floodplain natural values, including vegetation, soils, and wildlife. In addition, if certain areas are used repeatedly, vegetation loss and soil erosion could occur. It is difficult to effectively close “zones” to allow for rest and restoration. The risk to campers from occupying the 100-year floodplain is low because flooding is not flashy on the St. Croix River. Floodwaters gradually rise, allowing campsites to be vacated before the water is too high.

As noted in the previous discussion of impacts on vegetation and soils, the existing impacts to floodplain values on the main navigational channel are major and long-term.

Cumulative Impacts -- The floodplain along the Riverway is in generally good condition and well protected. However, influences from outside the floodplain, in the larger watershed, such as increases in impervious surfaces and run-off could impact the floodplain. Alternative 2a would provide more protection to floodplain values than the no action alternative by managing camping to help reduce impacts to soils and vegetation.

Conclusion – So long as demand does not exceed supply of campsites or space in the backwater zones, impacts to floodplains would be minor and short-term. There

would be minor modifications to the floodplain; impacts would be small, but measurable. Flood elevations would not be measurably impacted by improvements at designated campsites. If demand exceeds supply, impacts would increase as a result of overcrowding and camping outside of designated campsites.

Existing major to moderate impacts on the main navigational channel below the Soo Line High Bridge are long-term, and would take more than 3 years to restore.

Impairment – This alternative would not impair the floodplain of the Lower Riverway.

5.7.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Floodplain Impacts – Similar to 2a except Alternative 2b would provide additional protection to floodplains by managing demand for campsites with a permit or reservation system.

Cumulative Impacts – Similar to 2a. In addition, the impacts from demand possibly exceeding supply of campsites would be reduced through the use of a permit or reservation system.

Conclusion – Alternative 2b would result in minor modifications to the floodplain from campsite improvements and use that would have minor impacts on floodplain values. The impacts would be short-term, taking less than 3 years to recover. Existing impacts to floodplain values on the main navigational channel are long-term and may take more than 3 years to restore.

Impairment -- Alternative 2b would not result in impairment to floodplains.

5.7.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Floodplain Impacts – Similar to 2a. However, impacts to natural floodplain values, including vegetation, soils and wildlife in the backwaters would be reduced by requiring campers to stay in designated backwater campsites. These backwater campsites would be available by reservation only.

Cumulative Impacts – Similar to 2a, however, impacts would be further reduced by designating campsites in the backwaters.

Conclusion – As long as demand does not exceed supply of campsites, Alternative 3a would result in minor modifications to the floodplain that would not measurably impact natural floodplain values or flood elevations. The impacts would be localized and short-term, taking less than 3 years to recover. If demand exceeds supply,

impacts to natural values would increase. The existing impacts to floodplain values on the main navigational channel below the Soo Line High Bridge would remain moderate to major until restoration of heavily impacted areas is achieved. These impacts are long-term and restoration may take 3 years or more. The risk to campers from occupying the 100-year floodplain is low.

In compliance with Executive Order 11988, a Statement of Findings is included in Appendix D.

Impairment -- Alternative 3a would not impair the floodplain of the Lower Riverway.

5.7.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Floodplain Impacts – Similar to 3a. In addition, the permit or reservation system would further limit impacts by managing demand for campsites so that it does not exceed supply.

Cumulative Impacts – Similar to 3a, but impacts further reduced by managing demand for campsites.

Conclusion - Impacts to floodplain values would be minor and short-term. As necessary, measures could be taken to mitigate impacts, such as installing steps at access points and closing areas for rest and restoration to protect vegetation and soils. Sites could also be temporarily closed to protect sensitive wildlife. Minor modifications to the floodplains would result that would not measurably impact flood elevations. The risk to campers from occupying the 100-year floodplain is low.

Impairment -- Alternative 3b would not impair the floodplain of the Lower Riverway.

5.7.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Floodplain Impacts – Similar to 3a. In addition, impacts to natural floodplain values including vegetation, soils, and wildlife would be further reduced by eliminating backwater camping; requiring smaller group sizes; and, below the Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups (with restrictions).

Cumulative Impacts – Similar to 3a, but impacts further reduced.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 4a would have minor impacts to natural floodplain values. Impacts would be short-term as mitigation measures, such as installing steps at access points and closing areas for rest and restoration to protect vegetation would be relatively easy to implement. If demand exceeds supply, impacts would increase. The existing impacts to natural floodplain values on the main navigational channel below the Soo Line High Bridge would likely remain until restoration of heavily impacted areas is achieved. These impacts are long-term and may take 3 years or more to restore. Restoration may be easier to achieve under this alternative compared to the other action alternatives because tent camping would be eliminated. The risk to campers from occupying the 100-year floodplain is low.

Impairment -- Alternative 4a would not result in impairment to the floodplain.

5.7.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Floodplain Impacts – Similar to 4a, however, impacts to natural floodplain values would be further reduced because the campsite permit or reservation system would balance supply and demand.

Cumulative Impacts – Similar to 4a; impacts further reduced through use of the permit or reservation system.

Conclusion – The impact of Alternative 4b to natural floodplain values would be minor. Mitigation measures to offset impacts to vegetation, soils and wildlife would be easy to implement and effective. Impacts would be short-term, taking less than 3 years to recover. The existing impacts on the main navigational channel would likely remain until restoration of heavily impacted areas is achieved, which may take more than 3 years. Restoration of natural floodplain values may be easier to achieve under this alternative compared to the other action alternatives because tent camping would be eliminated below the Soo Line High Bridge. Elsewhere on the river, demand for designated campsites would be managed so that it does not exceed supply.

Impairment -- Alternative 4b would not result in impairment to floodplain values.

5.8 Native Animals

5.8.1 Methodology

According to the NPS *Management Policies*, the NPS will seek to maintain native animals as part of the natural ecosystem of the parks by preserving and restoring habitats, providing protection from disturbance so animals may carry out activities important for survival, and

minimizing human impacts. The impact analysis focuses on the compatibility of each alternative with this NPS policy.

Basis of Analysis – Camping activities can impact native animals by degrading habitat and/or disturbing feeding, breeding, rearing, and resting behavior.

Intensity, Duration, and Type of Impact

Minor – Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion is minor. Human disturbance of activities necessary for survival may occur on an occasional basis, individual animals may be affected, but the impact is short-term. Occasional responses to disturbance (such as flight response) would be expected but not to the extent that would affect population levels. Sufficient habitat would remain to maintain the viability of native animal species.

Moderate – Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion is moderate. Human disturbance of activities necessary for survival may occur on an occasional basis, individual animals may be affected, but the impact does not threaten the continued existence of any species at the Riverway.

Major – Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion is major. Human disturbance of activities necessary for survival likely occurs on a regular basis during critical periods of reproduction or in key habitats for native animals and threatens their continued existence at the Lower Riverway.

5.8.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts to Native Animals -- Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. These animals include native mussels, fish, turtles, raptors, song birds, waterfowl, and mammals. Interference with activities necessary for survival likely occurs on an occasional basis, but does not threaten the continued existence of any species at the Riverway. Some impacts may occur during critical periods of reproduction or in key habitat for sensitive native species. An example of this would be impacts on turtles. Sandy islands and shorelines are favored for camping. They are also the favored nesting location for turtles. Impacts to habitat cannot be confined to specific locations to avoid impacts to turtles under the open camping policy.

Cumulative Impacts – Recreational activities (both day use and camping) and development in and near the Riverway have cumulative effects to native animals. The No Action Alternative has potential for increasing negative impacts to native

animals as pressure would be expected to increase with increased population and camping activity.

Conclusion -- Impacts to native animals at existing camping levels would be considered minor to moderate, depending on location. Moderate impacts are more likely below the Soo Line High Bridge because erosion and habitat degradation is greater and crowding is more prevalent. Impacts are long-term as it is difficult to effectively mitigate impacts under the open camping policy.

Impairment -- During the cooperative management planning process for the Lower Riverway (NPS, 2000a) the following significance statement was developed: “The natural communities, both terrestrial and aquatic, are diverse and of high quality. The sloughs, backwaters, braided streams, and other river features provide habitat for native plants and animals. Rare and endangered plants and animals including mussels, eagles, and others, thrive here. The river corridor is an important flyway for migrating birds and contains an exceptionally diverse fishery.” Native animals are a key component of the natural integrity of the Riverway. Therefore, it is important to consider whether they are being impaired. Impacts to native animals fall into the minor to moderate range under existing camping levels. They have not reached the level of impairment.

5.8.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Native Animals -- Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Impacts to wildlife habitat would be confined to specific locations on the main channel by establishing designated campsites and campsites would be sited with consideration of possible impacts to native animals. In addition, designated campsites could be temporarily closed during vulnerable life-stages to protect animals. Impacts of overnight tie-ups would be limited by restrictions on shoreline use and group sizes.

Impacts to native animals in the backwater camping zones would be limited by the one-night stay limit. However, as noted above, “zone” camping makes it difficult to effectively manage the location of impacts, the extent of disturbance, and numbers of people. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. The number of camping parties in the backwaters could exceed the intended number and result in increased impact to wildlife habitat and disturbance of activities important to survival. In addition, with “zone” camping, it is difficult to close off areas temporarily to protect animals. Backwater areas provide some of the most important native animal habitat at the Riverway, making impacts in these areas of particular concern.

Cumulative Impacts – The riverine ecosystem of the Riverway provides important habitat for native animals. Recreational activities (both day use and camping) as well as development in and near the Riverway have cumulative effects to native animals.

Alternative 2a would reduce impacts to native animals by managing camping in a way that protects habitat.

Conclusion – As long as demand does not exceed supply of campsites or space in the backwater zones, this alternative would have minor impacts to native animals. Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis and affect individual animals, but the impact would be short-term. Occasional responses to disturbance would be expected but not at levels that would affect population levels. If demand exceeds supply, impacts would increase.

Impairment – Alternative 2a would not result in impairment to native animals.

5.8.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Native Animals – Similar to 2a. However, Alternative 2b would provide additional protection to native animals by managing demand for designated campsites and space in the backwaters so that it does not exceed supply.

Cumulative Impacts – Similar to 2a. In addition, the impacts from demand possibly exceeding supply of campsites would be reduced with the permit or reservation system.

Conclusion – Alternative 2b would have minor impacts to native animals. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis and affect individual animals, but the impact would be short-term. Occasional responses to disturbance would be expected but not at levels that would affect population levels.

Impairment – Alternative 2b would not result in impairment to native animals.

5.8.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Native Animals – Similar to 2a, however, impacts to native animals would be further reduced by requiring camping in the backwaters to be in

designated campsites. These designated campsites would be available by reservation only, ensuring that demand does not exceed supply. Backwater campsites could be easily closed when necessary to protect activities important to the survival of native animals.

Cumulative Impacts – Similar to 2a, but impacts would be further reduced in backwater areas.

Conclusion – As long as demand does not exceed supply of campsites, this alternative would have minor impacts to native animals. Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis and affect individual animals, but the impact would be short-term. Occasional responses to disturbance would be expected but would not affect population levels. If demand exceeds supply, impacts would increase.

Impairment – Alternative 3a would not impair native animals at the Riverway.

5.8.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Native Animals – Similar to 3a, however, the impact from demand exceeding supply of campsites would be eliminated, as all campsites, both main channel and backwater, would be available by permit or reservation only. Impacts of overnight tie-ups would be minimized by restrictions on shoreline use and group size.

Cumulative Impacts – Similar to 3a, but impacts further reduced by managing demand for campsites through a permit or reservation system.

Conclusion – This alternative would have minor impacts to native animals. Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis, and affect individual animals, but the impact would be short-term. Occasional individual responses to disturbance would be expected but would not affect population levels.

Impairment – Alternative 3b would not result in impairment to native animals at the Riverway.

5.8.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Native Animals – Similar to 3a. In addition, impacts to native animals would be further reduced by eliminating backwater camping; requiring smaller group sizes; and, below the Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups (with restrictions).

Cumulative Impacts – Similar to 3a, but impacts further reduced.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 4a would have minor impacts to native animals. Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis, individual animals may be affected, but the impact would be short-term. Occasional responses to disturbance would be expected but not at levels that would affect population levels. If demand exceeds supply, impacts would increase.

Restoration of habitat below the Soo Line High Bridge may be easier to achieve under this alternative as no tent camping would be allowed below Arcola sandbar.

Impairment -- Alternative 4a would not result in impairment to native animals.

5.8.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Native Animals – Similar to 4a, however, impacts to native animals would be further reduced because demand for campsites would be managed so it would not exceed supply.

Cumulative Impacts – Similar to 4a; impacts further reduced.

Conclusion – Minor impacts to native animals. Animals of concern are present and at vulnerable life-stages such as breeding and juvenile states. Habitat degradation through loss of vegetation and soil erosion would be minor. Human disturbance of activities necessary for survival would likely occur on an occasional basis and affect individual animals, but the impact would be short-term. Occasional responses to disturbance would be expected but not at levels that would affect population levels.

Impairment -- Alternative 4b would not result in impairment to native animals.

5.9 Threatened and Endangered Species

5.9.1 Methodology

The NPS *Management Policies* states that the NPS will protect and strive to recover all species native to national park system units that are listed under the Endangered Species Act. All NPS actions are to comply with the written requirements and spirit of the Endangered Species Act. The Endangered Species Act requires all federal agencies to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or their critical habitat. The NPS will manage critical habitat, essential habitat, and recovery areas to maintain and enhance their value for recovery of threatened and endangered species. In addition, to the extent possible, the NPS will manage state-listed species in a manner similar to federally-listed species. The following analysis focuses on the compatibility of each alternative with the requirements of the Endangered Species Act and NPS policies.

Basis of Analysis -- Camping could impact state and federally-listed threatened and endangered species through habitat degradation (soil erosion, sedimentation, vegetation disturbance) and/or through disturbance of activities important to survival such as feeding, breeding, rearing young, resting, and migration.

Intensity, Duration, and Type of Impact

Minor – A few individuals of threatened or endangered species or extremely localized impacts to their habitat would occur. Any change would have barely perceptible consequences to the species or habitat function. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act, the determination would be one of “*no effect.*” A proposed action would not affect a listed species or its designated critical habitat.

Moderate – Measurable effects on a relatively moderate number of individuals within a population of threatened or endangered species or a relatively large habitat area or important habitat attributes within the Lower Riverway. Listed species are present during particularly vulnerable life-stages such as migration or juvenile stages; mortality or interference with activities necessary for survival is expected on an occasional basis. An adverse effect to a listed species or designated critical habitat may occur as a direct or indirect result and the effect is not discountable. However, the impacts would not be expected to threaten the continued existence of the listed species at the Riverway. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*may affect / but not likely to adversely affect the species.*”

Major – Drastic and permanent consequences for a population of threatened or endangered species or almost all available critical or unique habitat area within the Lower Riverway. A population of threatened or endangered species or its habitat would be permanently altered, and the species would be at risk of extirpation from the Lower Riverway. Mortality or other effects are expected which could threaten the continued survival of the species. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*likely to jeopardize the continued existence of the species / adversely modify designated critical habitat.*”

5.9.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts on Threatened and Endangered Species – As described in Section 4.9 several federal-listed species and many state-listed species occur at the Riverway. Those species that occur in the Federally-administered zone, and which could be affected by the actions contemplated in this plan, include Higgin’s eye mussel, winged mapleleaf mussel, some state-listed mussel species, bald eagle, and Trumpeter swan. These species could be impacted through habitat degradation (erosion and sedimentation) or disturbance of activities.

Essential Habitat Areas for the endangered Higgin’s eye pearly mussel are located upstream and downstream (10-25 miles) (Hudson, Prescott) from camping areas that are experiencing major erosion impacts. Camping occurs along the stretch from St. Croix Falls to Cedar Bend, where the endangered winged mapleleaf mussel is found. Camping areas along this stretch are experiencing moderate to minor erosion impacts. In addition, two State-listed mussel species have been found about 2.5 miles downstream of the popular camping areas that are experiencing major erosion below the Soo Line High Bridge.

Sedimentation may be affecting these mussel areas, and may be having isolated impacts on individual mussels. However, it is unlikely that the contribution of sediment from erosion of camping areas plays a major role. The amount of sediment in the river contributed by the erosion of camping areas cannot be isolated from that contributed by other sources in the watershed.

Camping activities may also occasionally disturb threatened and endangered species. As stated in Section 4.9, the NPS, in consultation with the USFWS, has identified a number of measures to protect bald eagles at the Riverway (NPS, 2001). To prevent disturbance, if nesting bald eagles are present, human activity is to be kept back at least back at least 660 feet from the nest during the most critical and moderately critical nesting periods. The critical nesting period runs from February 1 to July 31. Under the No Action Alternative it is not possible to close off areas to camping to protect nesting bald eagles. The state-listed Trumpeter swan is also present during vulnerable life-stages such as breeding and juvenile stages. Interference with

activities necessary for survival, such as feeding and resting, likely occurs on an occasional basis.

Cumulative Impacts – Threatened and endangered species on the Lower Riverway are affected by habitat degradation from activities that occur both within and outside the boundary. Development in the watershed increases run-off and sedimentation and may be contributing to the increase in small sediments that appears to be having adverse impacts to native mussels. Additional study is needed to determine the cause of decline in juvenile mussels. Soil erosion at popular camping areas contributes to the sediment load of the river. This could be expected to contribute to habitat degradation. As area population grows, camping pressure may also grow and the impact of habitat degradation, soil erosion, sedimentation, and disturbance from human activity on threatened and endangered species could also increase.

Conclusion – The impact of the No Action Alternative to threatened and endangered species is currently minor to moderate. Minor impacts may occur to listed native mussels. These impacts may affect a few individuals of threatened or endangered species or have very localized impacts on their habitat within the Lower Riverway. The change resulting from erosion of camping areas likely has barely perceptible consequences to the species or habitat function. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act, the determination would be “*no effect*,” the No Action Alternative does not presently affect a listed mussel species or designated critical habitat.

Moderate impacts may be occurring to other listed species such as the bald eagle and trumpeters swans. These species are present during particularly vulnerable life-stages such as migration or juvenile stages; and mortality or interference with activities necessary for survival likely occurs on an occasional basis. The adverse effect is not discountable. However, the impacts resulting from camping activity are not expected to threaten the continued existence of the listed species at the Riverway. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*may affect / but not likely to adversely affect the species*.”

Impairment -- The No Action Alternative is not causing impairment to threatened and endangered species.

5.9.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Threatened and Endangered Species – As discussed in Section 5.5, limiting camping to designated campsites would reduce soil erosion. This would reduce the contribution that camping has on sediment loading and offer

additional protection for mussel habitat. None of the proposed designated campsites are near “Essential Habitat Areas” for native mussels.

Establishing designated campsites would limit disturbance to bald eagles. Locations proposed for the designated main channel campsites are all 660 feet or more from existing bald eagle nests. If bald eagles do choose to nest with 660 feet of a designated campsite, the campsite would be either temporarily closed during the critical nesting periods or permanently relocated.

Overnight boat tie-ups could have some impact on threatened and endangered species as they would not be limited to designated sites. The disturbance created by boat tie-ups would be minimized through the limits on group size (2 boats together), the requirement to maintain a 100-foot distance from other tie-ups, and the restrictions on shoreline use.

Disturbance of nesting bald eagles and trumpeter swans could occur in the backwater camping zones. The intention would be to minimize impacts by allowing only a small number of parties in the backwater zones and limiting stay to one-night. However, as previously discussed, campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. Without an advance allocation system (permits or reservation) the number of camping parties in the backwaters could exceed the intended number and result in increased impact to endangered species habitat and disturbance of activities important to their survival. In addition, with “zone” camping, it is difficult to temporarily close specific areas to protect species during critical life-cycle stages.

Cumulative Impacts -- Threatened and endangered species on the Lower Riverway are affected by habitat degradation that arises from sources both within and outside the boundary. Development in the watershed increases run-off and sedimentation and may be contributing to the increase in small sediments that appears to be having adverse impacts to native mussels. Alternative 2a may slightly reduce impacts to threatened and endangered mussels by limiting most camping to designated campsites and implementing measures to control erosion at those sites.

Conclusion – So long demand does not exceed supply of designated campsites or space in the backwaters, Alternative 2a would have minor impacts on threatened and endangered species. It would affect a few individuals of sensitive species or have very localized impacts on their habitat within the Lower Riverway. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*.” Alternative 2a would not affect a listed species or designated critical habitat. However, if demand exceeds supply of designated campsites or space in the backwater zones, impacts would increase.

Impairment – Alternative 2a would not result in impairment to threatened or endangered species of the Lower Riverway.

5.9.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Threatened and Endangered Species – Similar to 2a except that Alternative 2b would provide additional protection to threatened and endangered species by requiring permits or reservations for designated campsites and backwater camping, managing demand so that it does not exceed supply.

Cumulative Impacts – Similar to 2a. In addition, the impacts from demand possibly exceeding supply of campsites would be reduced.

Conclusion – Alternative 2b would have minor impacts to threatened and endangered species. It could affect a few individuals of threatened or endangered species or have very localized impacts on their habitat at the Lower Riverway. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*.” Alternative 2b would not affect a listed species or designated critical habitat.

Impairment – Alternative 2b would not result in impairment to threatened or endangered species or their critical habitat.

5.9.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Threatened and Endangered Species – Similar to 2a, however, impacts to threatened and endangered species would be further limited by establishing designated backwater campsites available by reservation only rather than establishing backwater “zones.” Thus, overnight use in the backwaters would be directed where there would be no or very limited impact on threatened and endangered species. The designated backwater sites could also be temporarily closed to protect activities important to the survival of threatened and endangered species. Disturbance impacts would likely occur as persons enter the backwaters. Occasional flight responses by bald eagles and trumpeter swans would be expected, but without interference with feeding, reproduction or other activities necessary for survival.

Cumulative Impacts – Similar to 2a, but impacts further reduced in backwater areas.

Conclusion – As long as demand does not exceed supply of designated main channel campsites, Alternative 3a would have minor impacts to threatened and endangered species. It could affect a few individuals of threatened or endangered species or have very localized impacts on their habitat at the Lower Riverway. Occasional flight responses would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*,” Alternative 3a would not affect a listed species or its designated critical habitat. If demand exceeds supply of designated campsites, impacts would increase.

Impairment – Alternative 3a would not result in impairment to threatened or endangered species or their critical habitat.

5.9.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Threatened and Endangered Species -- Similar to 3a except that Alternative 3b would provide additional protection to threatened and endangered species by requiring permits or reservations all designated campsites in the main channel as well as the backwaters. This would help ensure that the number of campers does not exceed the supply of campsites.

Cumulative Impacts – Similar to 3a. In addition, the impacts from demand possibly exceeding supply of campsites would be reduced.

Conclusion -- Alternative 3b would have minor impacts to threatened and endangered species. It could affect a few individuals or have very localized impacts on their habitat within the Lower Riverway. Occasional flight responses would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*,” Alternative 3b would not affect a listed species or its designated critical habitat.

Impairment -- Alternative 3b would not result in impairment to threatened or endangered species of the Lower Riverway.

5.9.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts on Threatened and Endangered Species – Similar to 3a. In addition, any impact to threatened and endangered species that could arise from backwater camping would be further reduced by eliminating backwater camping.

The smaller group sizes, and, below Arcola sandbar, prohibiting tent camping, may also result in benefits by facilitating restoration of eroded areas.

Cumulative Impacts – Similar to 3a, but impacts further reduced.

Conclusion – As long as demand does not exceed supply of designated main channel campsites, Alternative 4a would have minor impacts to threatened and endangered species. It could affect a few individuals of threatened or endangered species or have very localized impacts on their habitat at the Lower Riverway. Occasional flight responses by animals would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*,” Alternative 4a would not affect a listed species or designated critical habitat. If demand exceeds supply of designated campsites, impacts would increase.

Impairment – Alternative 4a would not result in impairment to threatened or endangered species or their critical habitat.

5.9.8 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts on Threatened and Endangered Species – Similar to 4a except that Alternative 4b would provide additional protection to threatened and endangered species through a permit or reservation system for designated campsites. Demand would be managed so that it does not exceed supply.

Cumulative Impacts – Similar to 4a; impacts further reduced.

Conclusion – Alternative 4b would have minor impacts to threatened and endangered species. It could affect a few individuals or have very localized impacts on their habitat within the Lower Riverway. Occasional flight responses would be expected, but without interference with feeding, reproduction or other activities necessary for survival. For purposes of compliance with Section 7 of the Endangered Species Act the determination would be one of “*no effect*,” Alternative 4b would not affect a listed species or designated critical habitat.

Impairment -- Alternative 4b would not result in impairment to threatened or endangered species or their critical habitat.

5.10 Archeological Resources

5.10.1 Methodology

Archeological resources are critical to understanding and interpreting American prehistory and history. They are often fragile and may be easily destroyed unless proper attention is paid to their management. The NPS is responsible for ensuring that archeological resources under the agency's jurisdiction are identified, protected, preserved, and interpreted (NPS, 1998). The impact analysis focuses on the effectiveness of each alternative in meeting NPS responsibilities for protecting archeological resources.

Basis of Analysis -- Camping could impact archeological resources through soil disturbance and compaction associated with the construction and use of campsites. Impacts can include fracturing lithic, stone, and ceramic artifacts and removing artifacts from their context. The National Historic Preservation Act, as amended, requires Federal agencies to survey, document, and where feasible, preserve historic properties (i.e.: those that are on or eligible for listing on the National Register of Historic Places). Section 106 of the National Historic Preservation Act (16 USC 470 et seq.) provides guidance on how to meet this requirement. It requires Federal agencies 1) to survey and assess properties against National Register criteria and, if eligible 2) assess the effect of the proposed undertaking, and 3) if necessary, mitigate adverse effect.

Definitions of Intensity, Duration and Type of Impact

Minor – Disturbance of an archeological site(s) results in little, if any, loss of integrity. The determination of effect for § 106 would be *no adverse effect*.

Moderate – Disturbance of an archeological site(s) results in loss of integrity. The determination of effect for § 106 would be *adverse effect*. A memorandum of agreement (MOA) would be executed among the NPS and the state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation, in accordance with 36 CFR 800.6(b). The purpose of the MOU would be to identify measures to minimize or mitigate adverse impacts, thus reducing the intensity of impact from moderate to minor to achieve a § 106 determination of *no adverse effect*.

Major – Disturbance of an archeological site(s) results in loss of integrity. The determination of effect for § 106 would be *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the NPS and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a MOA in accordance with 36 CFR 800.6(b).

5.10.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impact on Archeological Resources -- Under this alternative, visitors may camp wherever they choose on NPS land in the open camping zones and on islands in the island-only camping zones. In the island-only zones, this probably has

no impact on archeological sites. The islands are relatively new alluvial deposits and unlikely to contain archeological resources. However, camping also occurs on other soil types on bench areas above the 100-year floodplain and has occurred on some identified archeological sites within the open camping zones.

Cumulative Impacts -- Archeological resources along the Riverway have been impacted by eroding shorelines and activities such as farming and building homes and roads. The minimal management of camping that occurs under the No Action Alternative would allow camping to continue to have potentially negative impacts to archeological sites from trampling and erosion. These impacts would be expected to increase with increasing population and camping pressure in the area.

Conclusion – The full impact of the No Action Alternative on archeological resources could range from minor to major. Minor impacts are those that result in disturbance of archeological sites but little, if any, loss of integrity. The determination of effect for §106 would be *no adverse effect*. Major impacts are those that do result in loss of integrity and that cannot be minimized or mitigated. The determination of effect for § 106 would be *adverse effect*. The full impact of camping cannot be known until areas are surveyed, their eligibility for listing on the National Register is determined. Any impacts that are occurring to archeological resources under the No Action Alternative are long-term because it is difficult to effectively close sites to protect resources under the current open camping policy.

Impairment -- The Cooperative Management Plan states that one of the purposes of establishing the Riverway is to preserve and protect its significant cultural resources. The Riverway's exceptional resources include the varied cultural resources that reflect the significant role it has played over thousands of years as a river transportation corridor. However, while the No Action Alternative may be impacting individual sites it is unlikely that it is resulting in impairment to the archeological resources along the Riverway since most camping occurs in areas that are not likely to contain archeological resources.

5.10.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact on Archeological Resources – The locations proposed for designated campsites between Franconia Landing and Log House Landing have been examined for the presence of archeological resources. Shovel tests were made at the primary use areas of each proposed campsite and approximately 100 feet from the river. Deep alluvial deposits were found at each site. No cultural materials were encountered at any of the locations (NPS, 2005). Locations proposed for designated campsites below Log House Landing to north Stillwater are also alluvial in nature and similar results would be expected from shovel tests there. The impact of overnight boat tie-ups would be limited by restrictions on shoreline use, and group size limits.

In the backwater zones, camping would take place outside of designated campsites in areas selected by the camper. Impacts to archeological resources would be minimized by limiting the length of stay to one night and not allowing fires. However, if the same locations are used repeatedly, soil compaction and erosion could occur and adversely impact any underlying archeological resources. In addition, as discussed previously, it is difficult to manage numbers using “zone” camping. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. This could result in increased impact to archeological resources in the backwater areas.

Cumulative Impacts -- Archeological resources in and near the Riverway have been impacted by eroding shorelines, farming, and construction activities. Alternative 2a would reduce impacts to archeological resources from what currently occurs under the No Action Alternative.

Conclusion – So long as demand does not exceed supply of designated campsites, Alternative 2a would have no impact to archeological sites along the main channel. The potential impact of backwater zone camping on archeological resources could range from minor to major. A complete archeological survey of the backwater zones has not been completed. It is, known, however, that numerous archeological resources exist in the backwaters. With the “backwater zone camping” contemplated under this alternative, camping could occur on and impact archeological resources.

Impairment – Alternative 2a would not result in impairment to the archeological resources of the Riverway.

5.10.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Tie-ups for Boats, Permit / Reservation System

Analysis of Impact on Archeological Resources – Similar to 2a. In addition, Alternative 2b would provide more protection to archeological resources by requiring permits or reservations for designated campsites and backwater camping, managing demand so that it does not exceed supply.

Cumulative Impacts -- Similar to 2a. In addition, the potential for impacts from demand exceeding supply of campsites on the main channel or space in the backwaters would be reduced.

Conclusion – Alternative 2b would have no impact to archeological sites along the main channel, where camping would be limited to designated sites and demand managed so that supply does not exceed the number of campsites available. Demand for space in the backwater zones would be managed so that demand would not exceed the intended number. However, this would not prevent campers from inadvertently camping on, and possibly damaging archeological sites in the

backwater zones. Impacts of backwater zone camping on archeological resources could be minor to major.

Impairment -- Alternative 2b would not result in impairment to archeological resources.

5.10.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact on Archeological Resources – Similar to 2a. In addition, any disturbance to archeological sites resulting from camping in the backwaters would be eliminated by establishing designated backwater campsites and requiring reservations for their use. The designated backwater campsites would be located on alluvial deposits or surveyed and cleared of archeological resources before open for use.

Cumulative Impacts - Similar to 2a. In addition, any disturbance to archeological sites resulting from camping in the backwaters would be eliminated by establishing designated backwater campsites and requiring reservations for their use.

Conclusion -- So long demand does not exceed supply of designated campsites on the main channel, Alternative 3a would have no impact to archeological sites. The determination of effect for § 106 would be *no effect* or *no adverse effect*. If demand exceeds supply and visitors camp outside of designated locations, impacts would increase.

Impairment-- Alternative 3a would not result in impairment to archeological resources.

5.10.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impact on Archeological Resources -- Similar to 3a. In addition, Alternative 3b would provide more protection to archeological resources by requiring permits or reservations for all designated campsites, managing demand so that it does not exceed supply.

Cumulative Impacts – Similar to 3a. In addition, the impacts from demand possibly exceeding supply of campsites would be eliminated.

Conclusion -- The impact of Alternative 3b to archeological sites would be none or minor. The determination of effect for § 106 would be *no effect* or *no adverse effect*.

Impairment -- Alternative 3b would not result in impairment to archeological resources.

5.10.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact on Archeological Resources – Same as 3a.

Cumulative Impacts – Same as 3a.

Conclusion – So long as demand does not exceed supply of campsites, Alternative 4a would have no impact to archeological resources. If demand exceeds supply and people camp outside of designated locations, impacts would increase.

Impairment – Alternative 4a would not result in impairment to archeological resources.

5.10.8 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impact on Archeological Resources – Similar to 4a. In addition, Alternative 4b would provide more protection to archeological resources by requiring permits or reservations for all designated campsites, managing demand so that it does not exceed supply.

Cumulative Impacts – Similar to 4a; impacts further reduced.

Conclusion – Alternative 4b would have no impact to archeological sites. The determination of effect for § 106 would be *no effect*.

Impairment -- Alternative 4b would not result in impairment to archeological resources at the Riverway.

5.11 Ethnography

5.11.1 Methodology

As the ancestral homelands of many tribes, the units of the national park system protect resources, sites, and vistas that are highly significant for the tribes. Certain contemporary American Indian and other communities are permitted by law, regulation, or policy to pursue customary religious, subsistence, and other cultural uses of park resources with which they are traditionally associated. Such continuing use is often essential to the survival of family, community, or regional cultural systems, including patterns of belief and

economic and religious life. Therefore, as stated in the NPS *Management Policies*, the NPS is to plan and execute programs in ways that safeguard cultural and natural resources and maintain traditional access. The impact analyses focuses on the compatibility of each alternative with this guidance.

Basis of Analysis – Through construction and/or use of areas, camping can impact ethnographic resources through damage or disturbance of natural and cultural resources important to traditionally-associated peoples. The National Historic Preservation Act, as amended in 1992 requires Federal agencies to survey, document, and where feasible, preserve ethnographic resources (i.e.: those that are on or eligible for listing on the National Register of Historic Places). Section 106 of the National Historic Preservation Act (16 USC 470 et seq.) provides guidance on how to meet this requirement. It requires Federal agencies 1) to survey and assess ethnographic properties against National Register criteria and, if eligible 2) assess the effect of the proposed undertaking, and 3) if necessary, mitigate adverse effect.

Definitions of Intensity, Duration, and Type of Impact

Minor – Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for § 106 would be *no adverse effect*.

Moderate – Impacts would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group’s practices and beliefs, even though the group’s practices and beliefs would survive. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for Section 106 would be *adverse effect*.

Major – Impact would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group’s body of practices and beliefs, to the extent that the survival of a group’s practices and/or beliefs would be jeopardized. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for Section 106 would be *adverse effect*.

5.11.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impacts to Ethnographic Resources – The No Action Alternative is having impacts to natural and cultural resources, as described in Sections 5.4, 5.6, 5.8 and 5.10 on

vegetation, soils, native animals and archeology. These impacts include trampling and denuding areas of vegetation, soil erosion, habitat degradation, and compaction and disturbance of archeological sites. As noted in Section above 4.11, these impacts are of concern to traditionally-associated tribes.

Cumulative Impacts – Natural and cultural resources in and near the Lower Riverway are impacted by development, recreational use, and, to some extent, by natural processes such as flooding and erosion which can expose artifacts. The No Action Alternative contributes to cumulative impacts through the minimal management of camping and allowing impacts to spread. If pressure from camping increases with the projected growth in area population, impacts to ethnographic resources would also increase.

Conclusion -- Many of the natural and cultural resources of the Riverway could also be considered ethnographic resources by traditionally-associated peoples. A determination of the impact of camping on particular ethnographic sites or practices can only be achieved by consulting with potentially affected tribes. The potentially affected tribes (St. Croix Chippewa, Lac Courte Oreilles Band of Chippewa Indians, Shakopee Mdewakanton Sioux, Prairie Island Indian Community, and Mille Lacs) have all been contacted during the development of this plan/EA. They were contacted during the initial scoping period (NPS, 2003) and were requested to review the first internal draft camping management plan (NPS, 2006). No response was received.

Under the No Action Alternative camping is having impacts to soils, vegetation, native animals, and archeology. These impacts are apparent and alter resource conditions. The NPS believes the impacts of the No Action Alternative to ethnographic resources are moderate. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment -- The No Action Alternative is not resulting in impairment of ethnographic resources on the Lower Riverway.

5.11.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Ethnographic Resources – Alternative 2a would have positive impacts on soils, vegetation, native animals and archeology, as compared to the No Action Alternative. On the main channel, natural and cultural resources would be protected through establishing designated campsites and group size limits. Designated campsites would not be established in areas with sensitive cultural or natural resources, which may also be considered ethnographic resources.

The impact of overnight boat tie-ups would be limited by restrictions on shoreline use, and group size limits.

In the backwater zones, camping would take place outside of designated campsites in areas selected by the camper. Impacts to ethnographic resources would be minimized by limiting the length of stay to one night, restricting group size, and not allowing fires. However, if the same locations are used repeatedly, soil compaction and erosion could occur and adversely impact vegetation and any underlying archeological resources. In addition, as previously discussed, “zone” camping makes it difficult to effectively manage numbers. Campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space in the backwater zones. Without an advance allocation system (permits or reservation) the number of camping parties in the backwaters could exceed the intended number and result in increased impact to natural and cultural resources, which may also be considered ethnographic resources.

Cumulative Impacts -- Natural and cultural resources in and near the Lower Riverway, which may also be considered ethnographic resources, are impacted by development, recreational use, and, to an extent by natural process such as flooding and erosion. Alternative 2a would reduce the contribution to cumulative impacts to these resources arising from camping.

Conclusion – A determination of the impact of camping on particular ethnographic sites or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes (St. Croix Chippewa, Lac Courte Oreilles Band of Chippewa Indians, Shakopee Mdewakanton Sioux, Prairie Island Indian Community, and Mille Lacs) have been contacted during the development of this plan/EA. They were contacted during the initial scoping period (NPS, 2003) and were requested to review the first internal draft camping management plan (NPS, 2006). No response has been received.

The NPS believes that, as long as demand does not exceed supply of designated campsites, the impacts of Alternative 2a to ethnographic resources on the main channel would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs. If demand exceeds supply of designated campsites and camping occurs outside of designated sites, impacts could increase.

The backwaters are important areas for animals to breed, rear young, and feed. Archeological resources also exist there. These natural and cultural resources may also be ethnographic resources. As described above in the sections on vegetation, soils, native animals, threatened and endangered species, and archeological resources; it is difficult to manage numbers under zone camping. Numbers of people camping (and therefore impacts) could exceed the level intended. Therefore, the NPS believes the potential impact of backwater zone camping on ethnographic resources could range from minor to moderate, as defined above. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment – Alternative 2a would not result in impairment to ethnographic resources.

5.11.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Ethnographic Resources – Similar to 2a. In addition, Alternative 2b would provide more protection to ethnographic resources by requiring permits or reservations for designated campsites and backwater camping, managing demand so that it does not exceed supply.

Demand for space in the backwater zones would be managed so that demand would not exceed the intended number. However, this would not prevent campers from inadvertently camping on, and possibly damaging archeological sites, which may also be considered ethnographic resources, in the backwater zones. The impacts of the backwater camping on ethnographic resources could be minor to moderate.

Requiring permits or reservations for camping may be perceived by potentially affected tribes as having either positive or negative impacts; positive from assuring that designated campsites or space in the backwaters would be available, or negative if advance planning is seen as interfering with access. As stated in Section 2.5.2 above, treaty rights on the Lower Riverway within the ceded territory (upstream of river mile 41) would be honored by making overnight permits or campsite reservations available free-of-charge for tribal members exercising treaty rights under permit from their tribe.

Cumulative Impacts – Similar to Alternative 2a. Alternative 2b would further reduce cumulative impacts to ethnographic resources arising from camping by managing demand so that it does not exceed supply.

Conclusion – A determination of the impact of camping on particular ethnographic sites or practices can only be achieved by consulting with potentially-affected tribes. Potentially affected tribes (St. Croix Chippewa, Lac Courte Oreilles Band of Chippewa Indians, Shakopee Mdewakanton Sioux, Prairie Island Indian Community, and Mille Lacs) have been contacted during the development of this plan/EA. They were contacted during the initial scoping period (NPS, 2003) and were requested to review the first internal draft camping management plan (NPS, 2006). No response has been received.

The NPS believes that the impact of Alternative 2b on ethnographic resources would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group's practices and

beliefs. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment -- Alternative 2b would not result in impairment to ethnographic resources.

5.11.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Ethnographic Resources – Similar to 2a. In addition, any impacts to ethnographic resources from camping in the backwaters would be reduced. Designated backwater campsites would be located so as to avoid or minimize impacts to important natural and cultural resources that may also be ethnographic resources.

Cumulative Impacts - Similar to 2a. In addition, disturbance to ethnographic resources that could result from “zone” camping in the backwaters would be eliminated.

Conclusion -- A determination of the impact of camping on particular ethnographic sites or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes (St. Croix Chippewa, Lac Courte Oreilles Band of Chippewa Indians, Shakopee Mdewakanton Sioux, Prairie Island Indian Community, and Mille Lacs) have been contacted during the development of this plan/EA. They were contacted during the initial scoping period (NPS, 2003) and were requested to review the first internal draft camping management plan (NPS, 2006). No response has been received.

The NPS believes that as long as the overnight use pass system is honored and demand does not exceed supply of designated campsites on the main channel, the impact of Alternative 3a to ethnographic resources would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for § 106 would be *no adverse effect*. If demand exceeds supply and visitors camp outside of designated locations, impacts would increase. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment-- Alternative 3a would not result in impairment to ethnographic resources.

5.11.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Ethnographic Resources – Similar to 3a. Impacts would be further reduced by managing demand for main channel campsites so that demand does not exceed supply.

Cumulative Impacts – Similar to 3a. Impacts would be further reduced by managing demand for main channel campsites so that demand does not exceed supply.

Conclusion – A determination of the impact of camping on particular ethnographic sites or practices can only be achieved by consulting with potentially affected tribes. Potentially affected tribes (St. Croix Chippewa, Lac Courte Oreilles Band of Chippewa Indians, Shakopee Mdewakanton Sioux, Prairie Island Indian Community, and Mille Lacs) have been contacted during the development of this plan/EA. They were contacted during the initial scoping period (NPS, 2003) and were requested to review the first internal draft camping management plan (NPS, 2006). No response has been received.

The NPS believes that the impact of Alternative 3b on ethnographic resources would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group's practices and beliefs. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment – Alternative 3b would not result in impairment to ethnographic resources.

5.11.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impacts to Ethnographic Resources – Similar to 3a. In addition, the smaller group sizes; and, below the Arcola sandbar, allowing only overnight boat-tie-ups (with restrictions) and eliminating tent camping may also result in benefits to ethnographic resources by having less impact on natural resources and facilitating restoration of existing eroded areas.

Cumulative Impacts – Same as 3a.

Conclusion – Similar to 3a. So long as the overnight use pass system is honored and demand does not exceed supply of campsites, the impact of Alternative 4a to ethnographic resources would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for § 106 would be *no adverse effect*. If demand exceeds supply and people camp outside of designated locations, impacts would increase. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment – Alternative 4a would not result in impairment to ethnographic archeological resources.

5.11.8 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impacts to Ethnographic Resources – Similar to 4a except that Alternative 4b would provide additional protection to ethnographic resources by managing demand for all designated campsites so that it does not exceed supply. This would minimize the number of people potentially camping outside of designated locations and inadvertently damaging ethnographic resources.

Cumulative Impacts – Similar to 4a; impacts further reduced.

Conclusion – The impact of Alternative 4a to ethnographic resources would be minor. Impacts would be slight but noticeable. However, they would neither appreciably alter resource conditions, such as traditional access nor site preservation, nor the relationship between the resource and the affiliated group’s body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for § 106 would be *no adverse effect*. This document will be sent to potentially-affected tribes for continued consultation and comment.

Impairment -- Alternative 4b would not result in impairment to ethnographic resources at the Riverway.

5.12 Scenic Values

5.12.1 Methodology

The Lower St. Croix National Scenic Riverway was designated under the Wild and Scenic Rivers Act to protect it’s free-flowing character, water quality and outstandingly remarkable

scenic, recreational, and geologic values. As stated in Section 10(a) of the Act (Public Law 90-542) rivers designated under the Act are to be managed in such a way as to protect and enhance the values for which they were designated. The impact analysis focuses on the compatibility of each alternative with this legal mandate.

Basis of Analysis – The opportunity to view riparian plant communities, intact shorelines, clean water, and wildlife, is critical to the scenic value of the Lower Riverway. Therefore, the impact of camping to critical resources such as vegetation, soils, water quality, native animal, and threatened and endangered species impact topics are all relevant to the scenic impact analysis.

Definitions of Intensity, Duration, and Type of Impact

Minor – Impacts to critical resources that are strongly linked to scenic value (vegetation, soils, water quality, and native animals) are, by and large, minor, isolated, and easily mitigated. There may be some moderate impacts, but these are easily mitigated and short-term. Intrusion on scenic values from establishing campsites is minor because development is limited and uses unobtrusive materials. Camping is managed in a way that protects and enhances scenic values.

Moderate – Impacts to critical resources that are strongly linked to scenic value (vegetation, soils, water quality, and native animals) are, by and large, moderate. Any major impacts are relatively localized. Impacts are not easily mitigated, and therefore, are long-term. Intrusion to scenic values occurs from too much development at designated campsites or the use of materials that do not blend with the surroundings.

Major – Impacts to key components of scenic values are, by and large, major, widespread, and not easily mitigated. Intrusion to scenic values occurs from excessive development and materials used for improvements are visually intrusive. Camping is not managed in a way that protects and enhances scenic values.

Duration –

- *Short-term:* An effect that within a short period of would no longer be detectable as the resource is returned to its pre-disturbance condition or appearance, generally less than 3 years.
- *Long-term:* A change in a resource or its condition that does not return the resource to pre-disturbance condition or appearance in less than 3 years or for all practical purposes could be permanent.

5.12.2 Alternative 1: No-Action Alternative: Open Camping Zones, Island Only Zones, Closed Zones

Analysis of Impact to Scenic Values – The No Action Alternative impacts resources that are critical to maintaining scenic value. In some popular camping areas, vegetation is being trampled leaving sandy soils vulnerable to erosion, trees are being lost, and wildlife habitat is being degraded. The impact of the No Action Alternative to resources critical to scenic values is as follows:

- Vegetation, Soils, Native Animals:
 - Below the Soo Line High Bridge on the main navigational channel, impacts are major on the heavily used islands (parts of South High Bridge, Pillar Island, Mile Long Island). Vegetation loss is severe and erosion is obvious as indicated by exposed tree roots. Major impacts to native animals through habitat degradation caused by loss of vegetation and soil erosion.
 - Below the Soo Line High Bridge off main navigational channel, impacts range from minor to moderate. Vegetation loss and exposed soil is either limited to the primary use areas of camping locations or it is slightly more widespread. However, vegetation loss is not severe and tree roots are not exposed, indicating that any erosion is minor. Moderate to minor impacts to native animals through habitat degradation.
 - Above Soo Line High Bridge, impacts range from minor to moderate. Vegetation loss and exposed soil is either limited to the primary use areas of camping locations or is slightly more widespread. However, vegetation loss is not severe and tree roots are not exposed, indicating that any erosion is minor. Impacts to native animals from habitat degradation ranges from minor to moderate.
- Water quality: The No Action Alternative is having moderate impacts to water quality as defined in subsection 5.6.1. Camping management is not as effective as it could be at minimizing the potential for water pollution from human activities.

Duration of Impacts: The impacts of the No Action Alternative to resources critical to maintaining scenic values are long-term. Without designated campsites, it is not possible to limit impacts to specific camping locations. Customary methods of mitigating camping impacts, such as temporarily closing campsites for rest and restoration are not feasible under the current policy of open “zone” camping.

Cumulative Impacts – Scenic values are impacted by development such as bridges, pipelines, power lines, communication towers and residences that can be seen from the Riverway. The No Action Alternative adds to those impacts through impacts to vegetation, soils, and native animals, resources critical to the scenic value of the Lower Riverway.

Conclusion – The overall impact of the No Action Alternative to scenic values would be considered moderate. Impacts to resources critical to scenic values are, by and large, moderate. Any major impacts are relatively localized. However, the impacts are long-term because they cannot be easily mitigated by restoring areas under the current policy of open camping.

Impairment – The study preceding designation of the Lower Riverway points out the significance of the island and slough environment to the scenic values for which the Riverway was established (DOI, 1973). In addition, the Cooperative Management Plan for the Lower Riverway identifies the landforms and geologic features, including the islands and bluffs as exceptional resources and values. The level of impact to the scenic value of islands on the main navigational channel below the Soo Line High Bridge is approaching impairment. The scenic value of the Lower Riverway, as a whole, is not impaired.

5.12.3 Alternative 2a: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact to Scenic Values – On the main channel, the impact of camping to resources critical to maintaining scenic value would be limited to designated campsites, provided that demand does not exceed supply. Mitigation measures, such as temporary closures for rest and restoration and installing erosion control would, relative to the No Action Alternative, be relatively easy to implement. Development at designated campsites would be done in a visually unobtrusive manner. It would be limited to placing a fire ring and a small, earth-toned campsite sign. Some areas may need to have small trees and brush cleared to provide open areas for tents. However, this would be minimal as most areas proposed for establishment of designated campsites have traditionally been used for camping. Steps may be needed in some areas to curb erosion at access points. Steps and any other stabilization structures would be constructed of natural or natural-appearing materials.

The impact of overnight boat tie-ups would be minimized by group size limits (2 boats together), spacing requirements (100 feet from other tie-ups and designated campsites), and restrictions on shoreline use (no tents, picnic tables etc).

Impacts to scenic values in the backwater camping zones would be minimized by limiting groups to 6 people and two boats, a 1-night stay, no campfires and the information on low-impact camping provided by the awareness course and backwater camping pass. However, it is difficult to effectively manage numbers of campers in camping “zones” and campers unable to find a designated campsite on the main channel may move to the backwaters in hopes of finding space. Thus, the number of camping parties could exceed the intended number and result in increased

impacts to vegetation, soils, and other key components of the scenery in the backwaters.

So long as demand does not exceed supply of designated campsites or space in the backwater zones, the impacts of Alternative 2a to key components of scenic values would be expected to be as follows:

- Vegetation, Soils, Native Animals:
 - Below the Soo Line High Bridge on the main navigational channel the impacts to vegetation, soils and, habitat on the most heavily used islands would remain major until restoration can be achieved. Elsewhere on the main channel the impacts to vegetation, soils and habitat would be minor because impacts could be easily mitigated, relative to the No Action Alternative. Campsites could be closed for rest and restoration, and protective measures installed, as needed. Impacts in the backwater zones could be greater because of the difficulties in closing areas for rest and restoration under zone camping.
- Water quality: Alternative 2a would have minor impacts to water quality as defined in subsection 5.6.1. Camping would be managed in a way that conforms to NPS policies for protecting water quality and minimizes the potential for pollution from human activities.
- Duration of Impacts: The major impacts below the Soo Line High Bridge are long-term; restoration would take more than 3 years. Elsewhere, impacts on the main channel would be short-term as customary mitigation measures, such as temporarily closing sites for rest and restoration would be relatively easy to implement.

Cumulative Impacts – Scenic values are impacted by development such as bridges, pipelines, power lines, communication towers, and residences that can be seen from the Riverway. Alternative 2a would reduce cumulative impacts by reducing the impact that camping has on resources critical to maintaining scenic values.

Conclusion – If restoration of heavily impacted areas can be achieved and as long as demand does not exceed supply of designated campsites or space in the backwaters, the impact of Alternative 2a on scenic values would be minor. Impacts to resources critical to scenic value (vegetation, soils, water quality, and native animals) would, by and large, be minor and short-term. Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values. If demand exceeds supply, impacts would increase.

Impairment – Alternative 2a would not result in impairment to scenic values of the Lower Riverway.

5.12.4 Alternative 2b: Designated Campsites, Backwater Camping Zones, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impact to Scenic Values – Similar to 2a. Alternative 2b would provide additional protection to resources critical to scenic value (vegetation, soils, water quality, and native animals) by managing demand for designated campsites and space in the backwaters so that it does not exceed supply.

Cumulative Impacts – Similar to 2a. In addition, the impacts from demand possibly exceeding would be reduced.

Conclusion – Impacts to resources critical to scenic value would be minor, isolated, and easily mitigated. Impacts to resources critical to scenic value (vegetation, soils, water quality, and native animals) would be minor and short-term. Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values. If demand exceeds supply, impacts would increase.

Impairment – Alternative 2b would not result in impairment to scenic values.

5.12.5 Alternative 3a (PREFERRED): Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact to Scenic Values – Similar to 2a. In addition, under Alternative 3a, designated backwater campsites would be established and reservations required for their use. This would reduce the potential impact from demand exceeding supply of space in the backwaters.

Cumulative Impacts – Similar to 2a. Impacts to scenic values of the backwaters would be further reduced.

Conclusion – If restoration of heavily impacted areas can be achieved and demand does not exceed supply of designated campsites, the impact of Alternative 3a on scenic values would be minor. Impacts to resources critical to scenic value would, by and large, be minor and short-term. Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values. If demand exceeds

supply, impacts would increase. Impacts to scenic values in the backwaters would be avoided by establishing designated backwater campsites and requiring reservations for their use.

Impairment -- Alternative 3a would not result in impairment to scenic values.

5.12.6 Alternative 3b: Designated Campsites, Designated Backwater Campsites, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impact to Scenic Values – Similar to 3a, but impacts would be further reduced by requiring permits or reservations for main channel as well as backwater campsites.

Cumulative Impacts – Similar to 3a, but further reduced by managing demand so that it does not exceed supply.

Conclusion – If restoration of heavily impacted areas can be achieved, the impact of Alternative 3b on scenic values would be minor. Impacts to resources critical to scenic value would, by and large, be minor and short-term. Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values.

Impairment – Alternative 3b would not result in impairment to scenic values.

5.12.7 Alternative 4a: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Overnight Use Pass

Analysis of Impact to Scenic Values – Similar to 3a. Impacts to scenic values may be further reduced by smaller group size limits and, below Arcola sandbar, by eliminating tent camping and allowing only overnight boat-tie-ups (with restrictions). This may facilitate restoration of impacted areas below the Arcola sandbar.

Cumulative Impacts – Similar to 3a but impacts to scenic values may be further reduced.

Conclusion – If restoration of heavily impacted areas is achieved, and as long as demand does not exceed supply of designated campsites, the impact of Alternative 4a on scenic values would be minor. Restoration of heavily impacted areas may be easier to achieve under this alternative by eliminating tent camping. Impacts to resources critical to scenic value would, by and large, be minor and short-term.

Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values. If demand exceeds supply, impacts would increase.

Impairment -- Alternative 4a would not result in impairment to scenic values.

5.12.7 Alternative 4b: Designated Campsites Above Arcola Sandbar, Overnight Boat Tie-ups, Permit / Reservation System

Analysis of Impact to Scenic Values – Similar to 4a, but impacts would be further reduced by requiring permits or reservations for designated campsites so that demand does not exceed supply.

Cumulative Impacts – Similar to 4a, but further reduced by managing demand so that it does not exceed supply.

Conclusion – If restoration of heavily impacted areas can be achieved, the impact of Alternative 3b on scenic values would be minor. Impacts to resources critical to scenic value would, by and large, be minor and short-term. Mitigation measures would be implemented if impacts begin to reach moderate levels, thereby, holding impacts to minor levels. Intrusion to scenic values by establishing designated campsites would be minor. Development would be limited and use unobtrusive materials. Camping would be managed in a way that protects and enhances scenic values.

Impairment – Alternative 4b would not result in impairment to scenic values.

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7.0 CONSULTATION AND COORDINATION / PREPARERS

7.1 Consultation and Coordination

Public scoping for the camping management plan was initiated in Fall 2003 as described in Chapter 1. Public involvement continued in Fall 2005 and will continue with review of this draft document.

Consultation under Section 7 of the Endangered Species Act of 1973 will continue with U.S. Fish and Wildlife Service review of this internal draft document. This draft document will also be sent to the Wisconsin and Minnesota State Historic Preservation Offices and potentially affected Indian tribes for review and comment.

7.2 Preparers

An interdisciplinary team that included the following staff members contributed to the development of this Camping Management Plan and Environmental Assessment. They included:

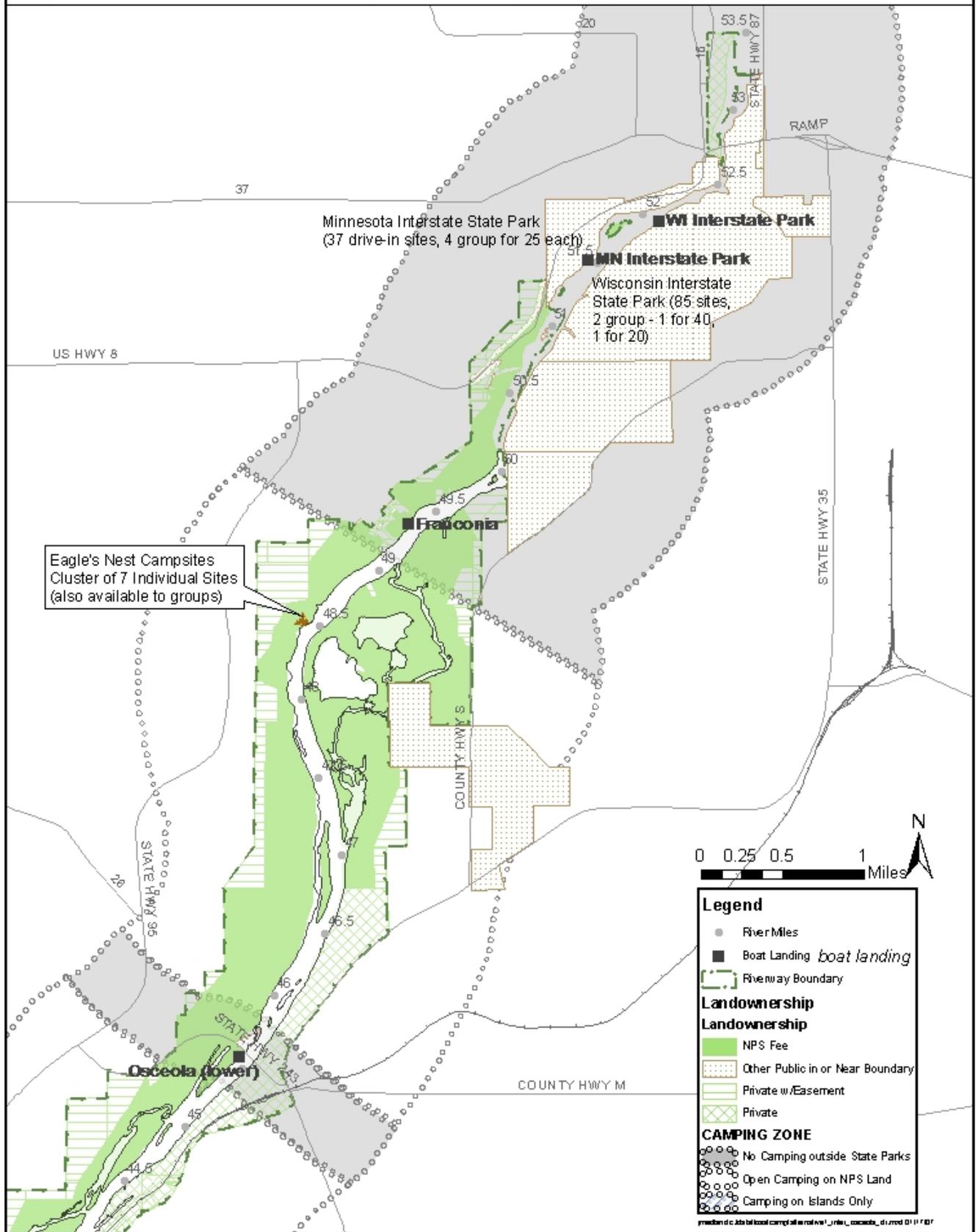
St. Croix National Scenic Riverway

Brian Adams -- Chief, Resource Protection
Larry Bloomer -- Lower District Maintenance Foreman
Dale Cox - - Lower District Interpreter
Randy Ferrin -- former Chief of Resource Management
Kate Hanson – Chief of Resource Management
George Keers – former Lower District Maintenance Foreman
Robin Maercklein -- Biologist
Jill Medland -- Resource Management Specialist (Planning Team Coordinator, Primary Author)
Jean Schaeppi -- Cultural Resource Specialist
Bob Whaley - - St. Croix District Ranger
Marianna Young – former GIS Specialist

APPENDIX A-1: MAPS OF ALTERNATIVE 1: NO ACTION

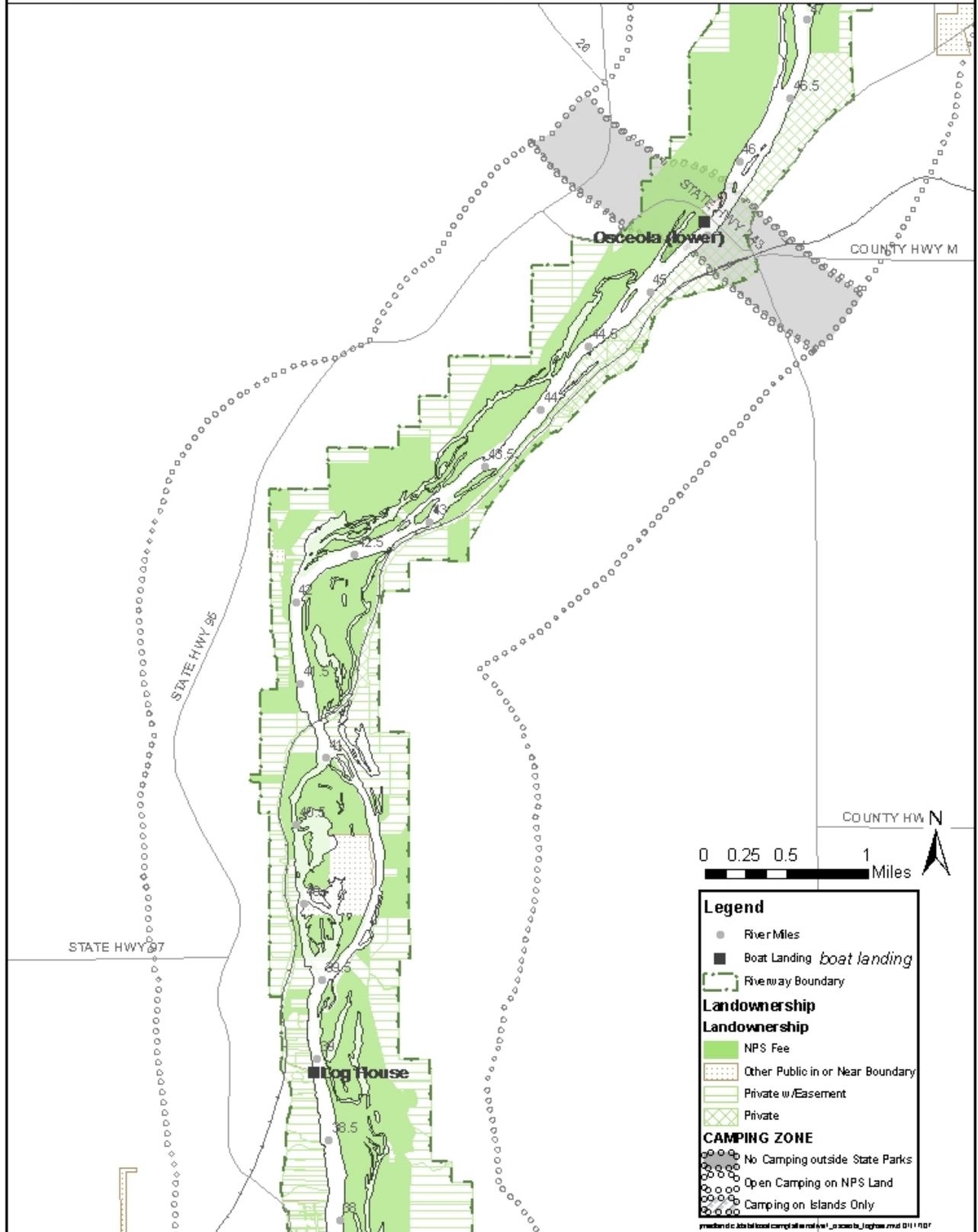


Alternative 1: No Action - Camping Zones Interstate to Osceola



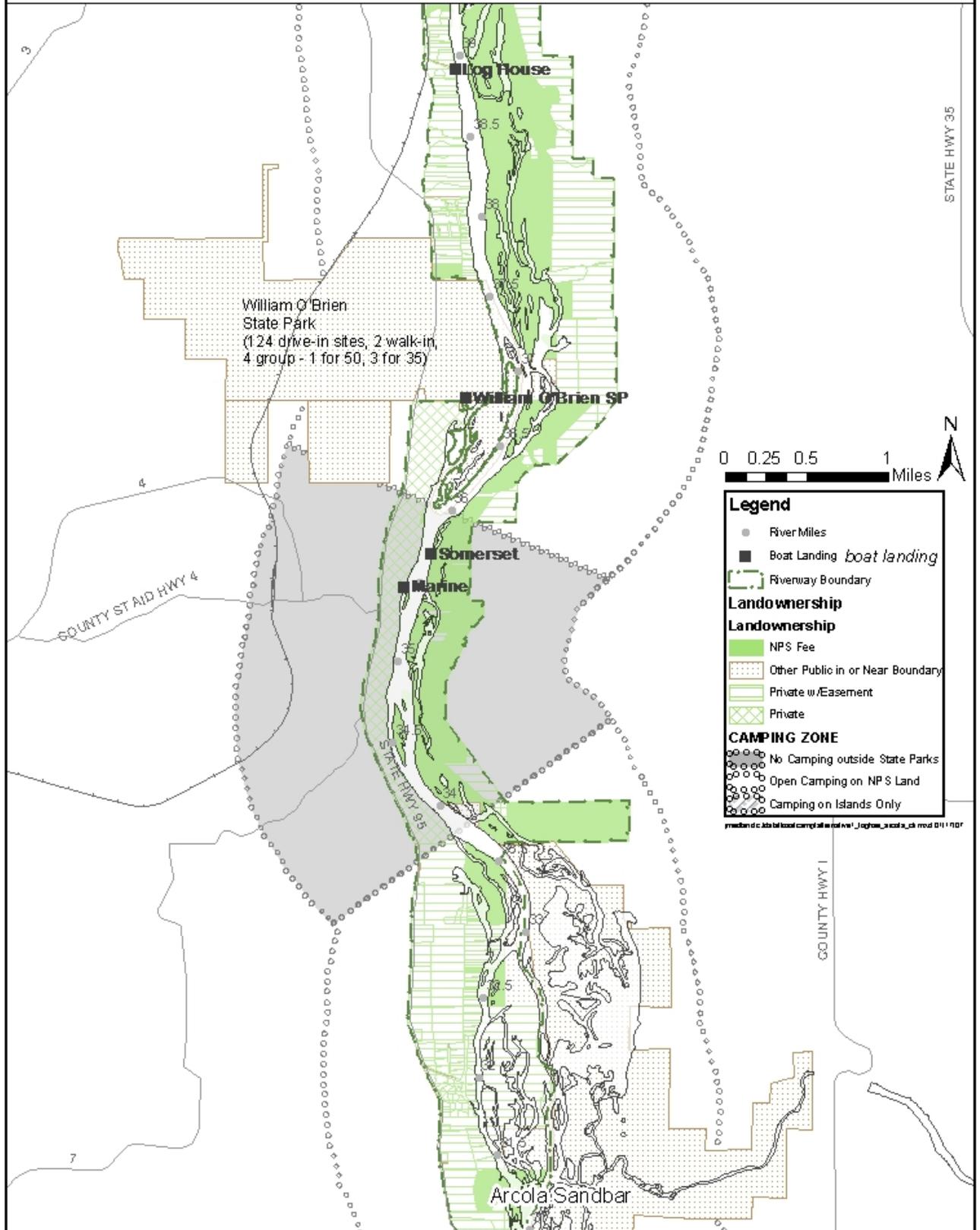


Alternative 1: No Action - Camping Zones Osceola to Log House



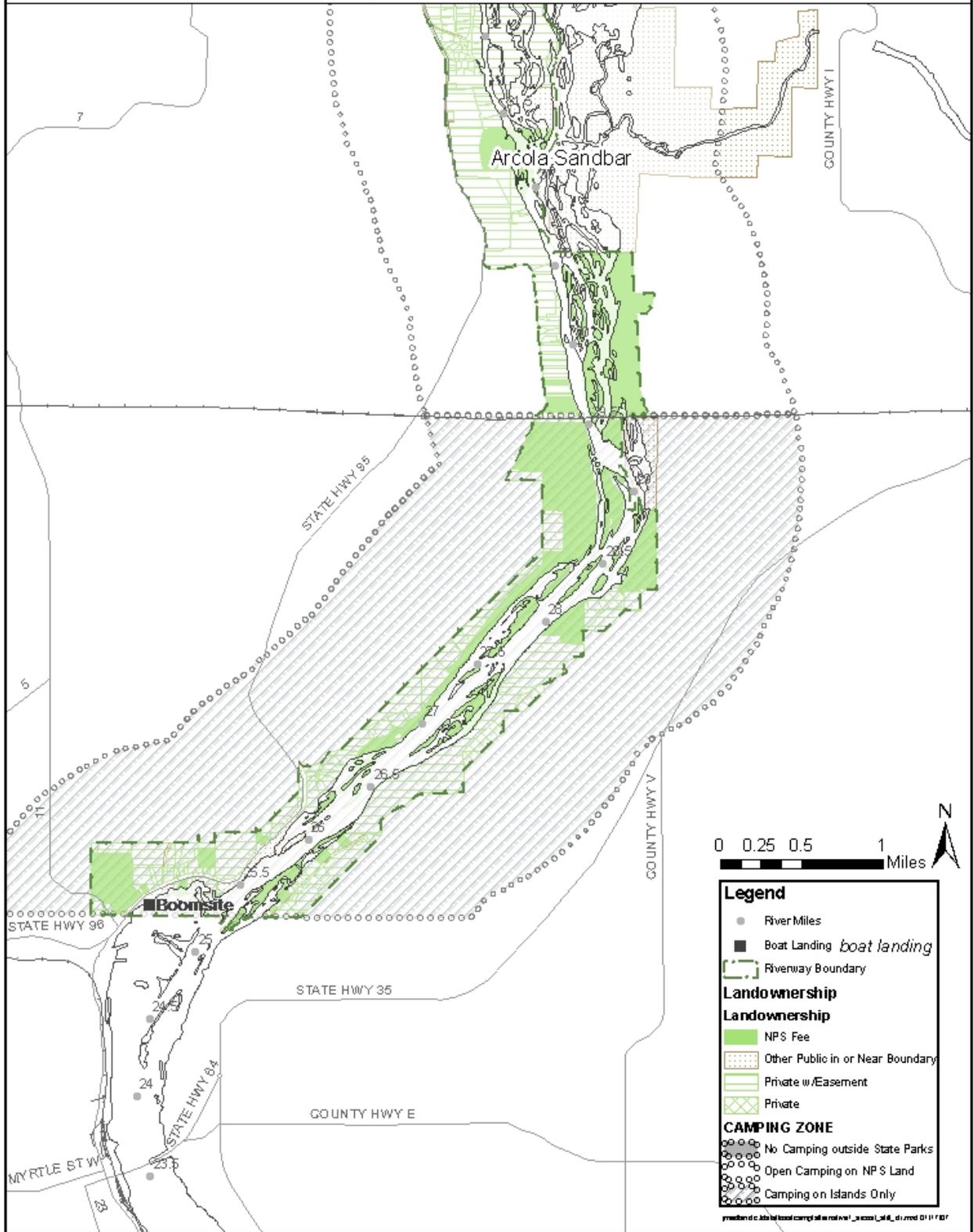


Alternative 1: No Action - Camping Zones Log House to Arcola sandbar





Alternative 1: No Action - Camping Zones Arcola sandbar to north Stillwater

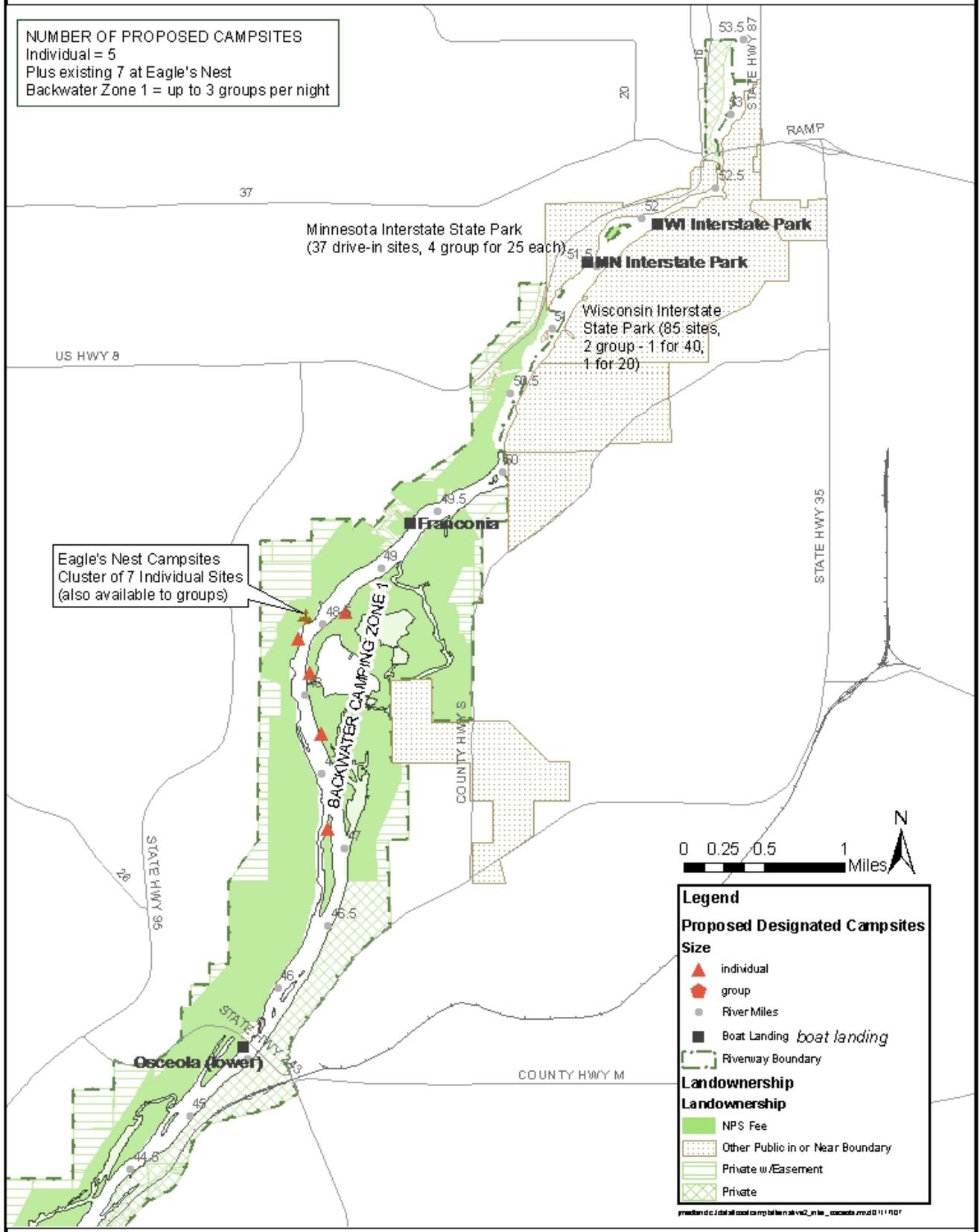


**APPENDIX A-2: MAPS OF ALTERNATIVE 2a / 2b: DESIGNATED
CAMPSITES, BACKWATER CAMPING ZONES, OVERNIGHT BOAT TIE-
UPS**



Alternative 2a / 2b: Designated Campsites and Backwater Camping Zones Interstate to Osceola

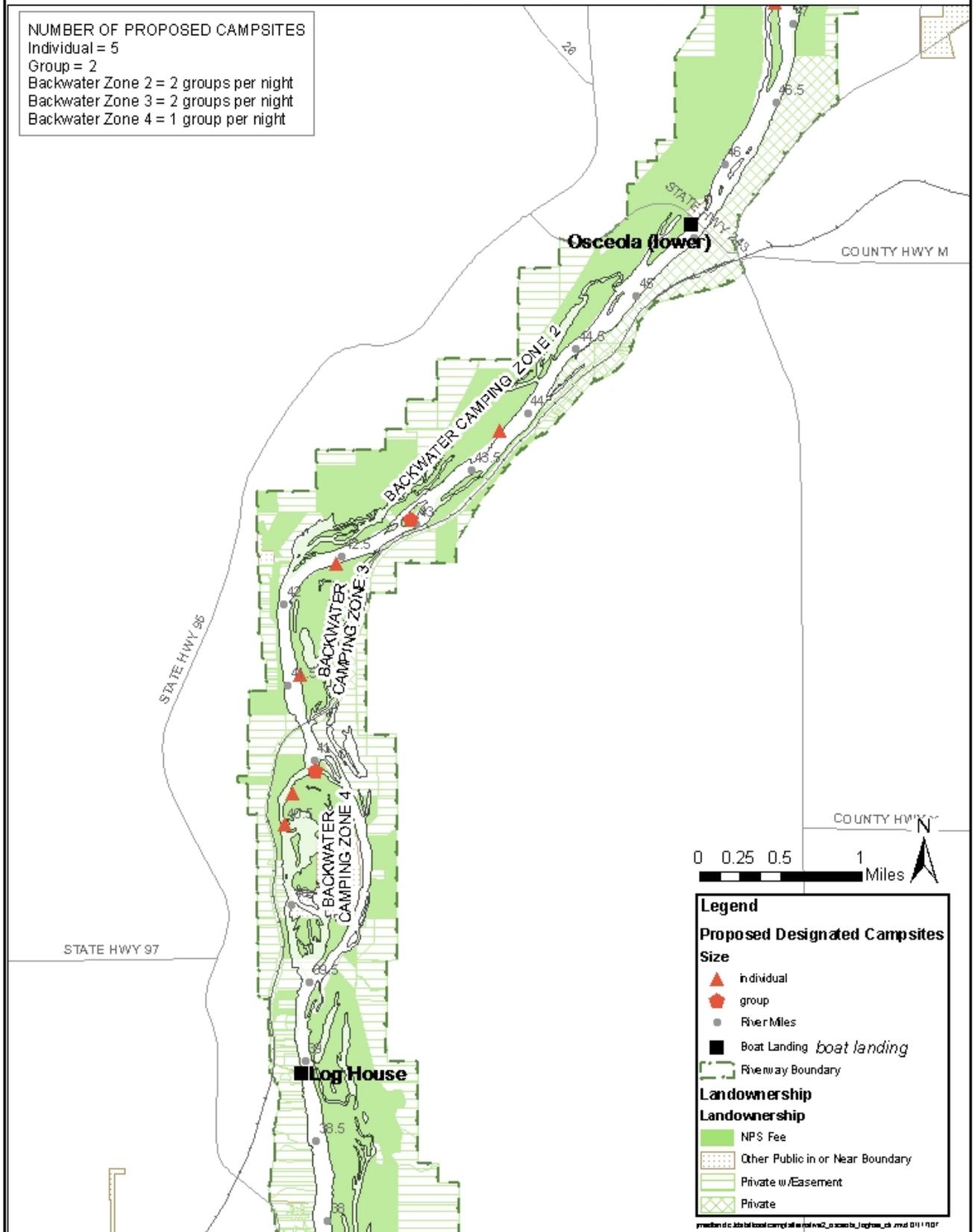
NUMBER OF PROPOSED CAMPSITES
 Individual = 5
 Plus existing 7 at Eagle's Nest
 Backwater Zone 1 = up to 3 groups per night





Alternative 2a / 2b: Designated Campsites and Backwater Camping Zones Osceola to Log House

NUMBER OF PROPOSED CAMPSITES
 Individual = 5
 Group = 2
 Backwater Zone 2 = 2 groups per night
 Backwater Zone 3 = 2 groups per night
 Backwater Zone 4 = 1 group per night



Legend

Proposed Designated Campsites

Size

- ▲ individual
- ◆ group
- River Miles
- Boat Landing *boat landing*
- - - Riverway Boundary

Landownership

Landownership

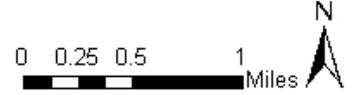
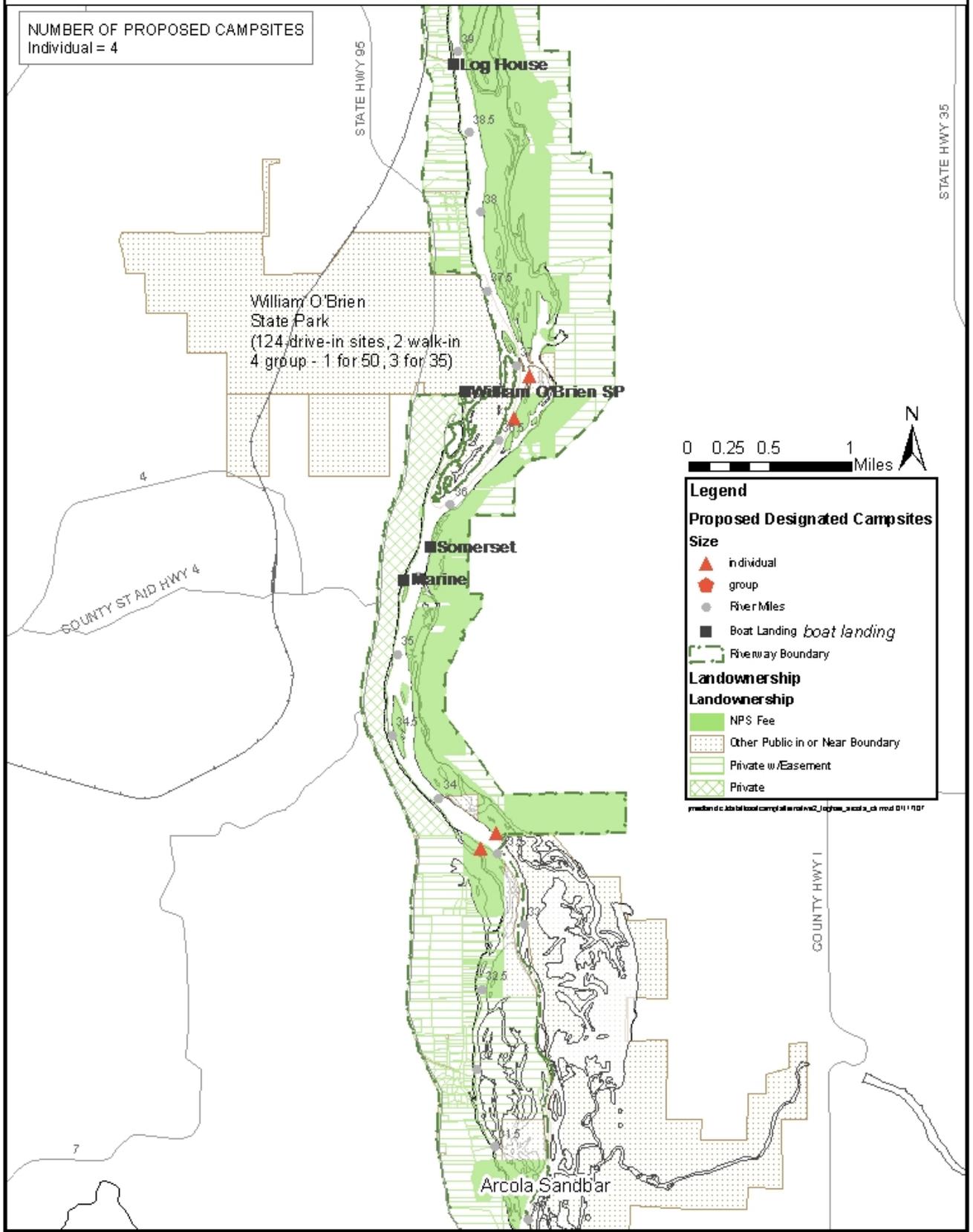
- NPS Fee
- ▨ Other Public in or Near Boundary
- ▧ Private w/Easement
- ▩ Private

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Alternative 2a / 2b: Designated Campsites and Backwater Camping Zones Log House to Arcola sandbar

NUMBER OF PROPOSED CAMPSITES
Individual = 4



Legend

Proposed Designated Campsites

Size

- ▲ individual
- ◆ group
- River Miles
- Boat Landing *boat landing*
- - - Riverway Boundary

Landownership

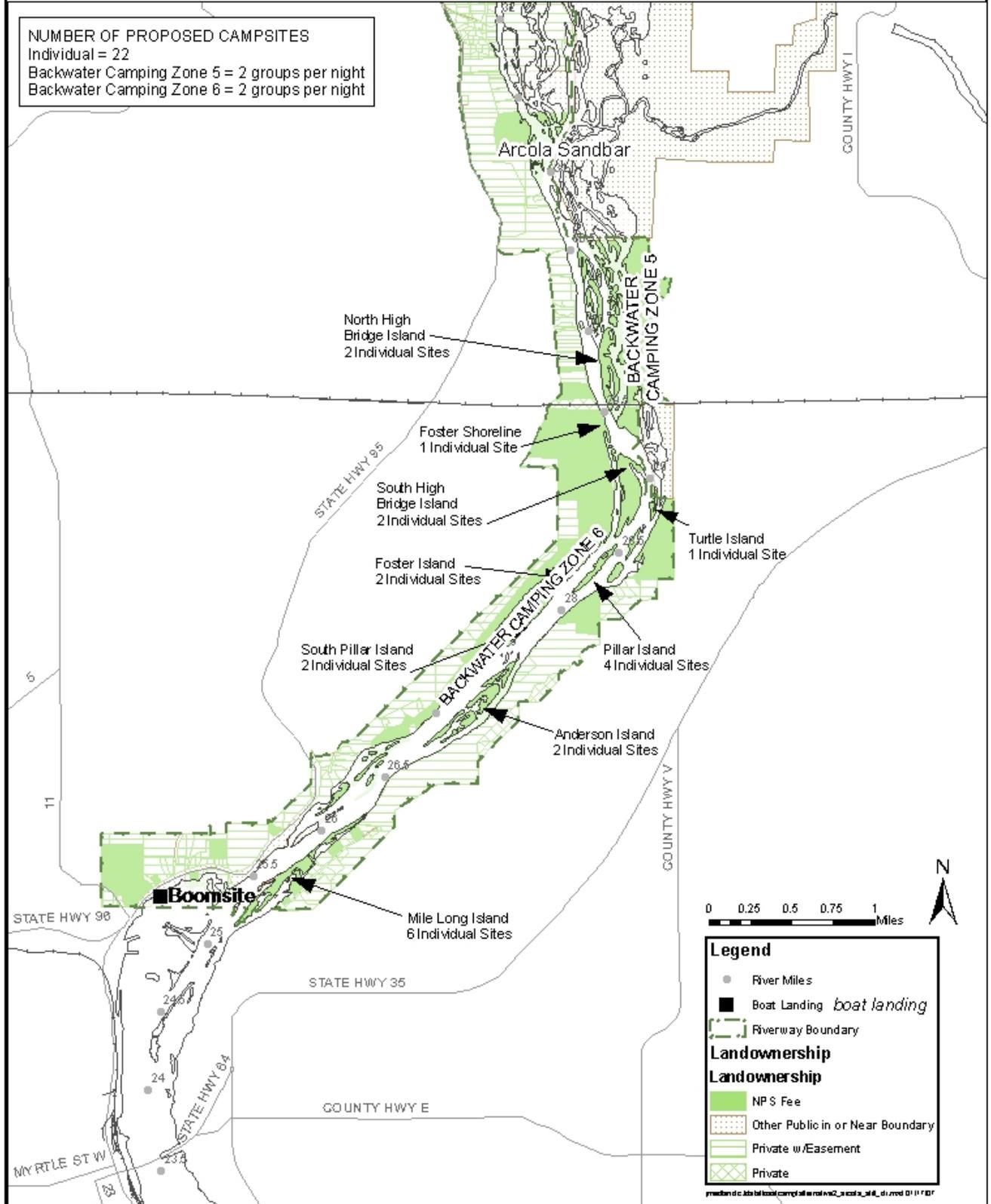
- NPS Fee
- Other Public in or Near Boundary
- ▨ Private w/Easement
- ▩ Private

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Alternative 2a / 2b: Designated Campsites and Backwater Camping Zones Arcola sandbar to north Stillwater

NUMBER OF PROPOSED CAMPSITES
 Individual = 22
 Backwater Camping Zone 5 = 2 groups per night
 Backwater Camping Zone 6 = 2 groups per night

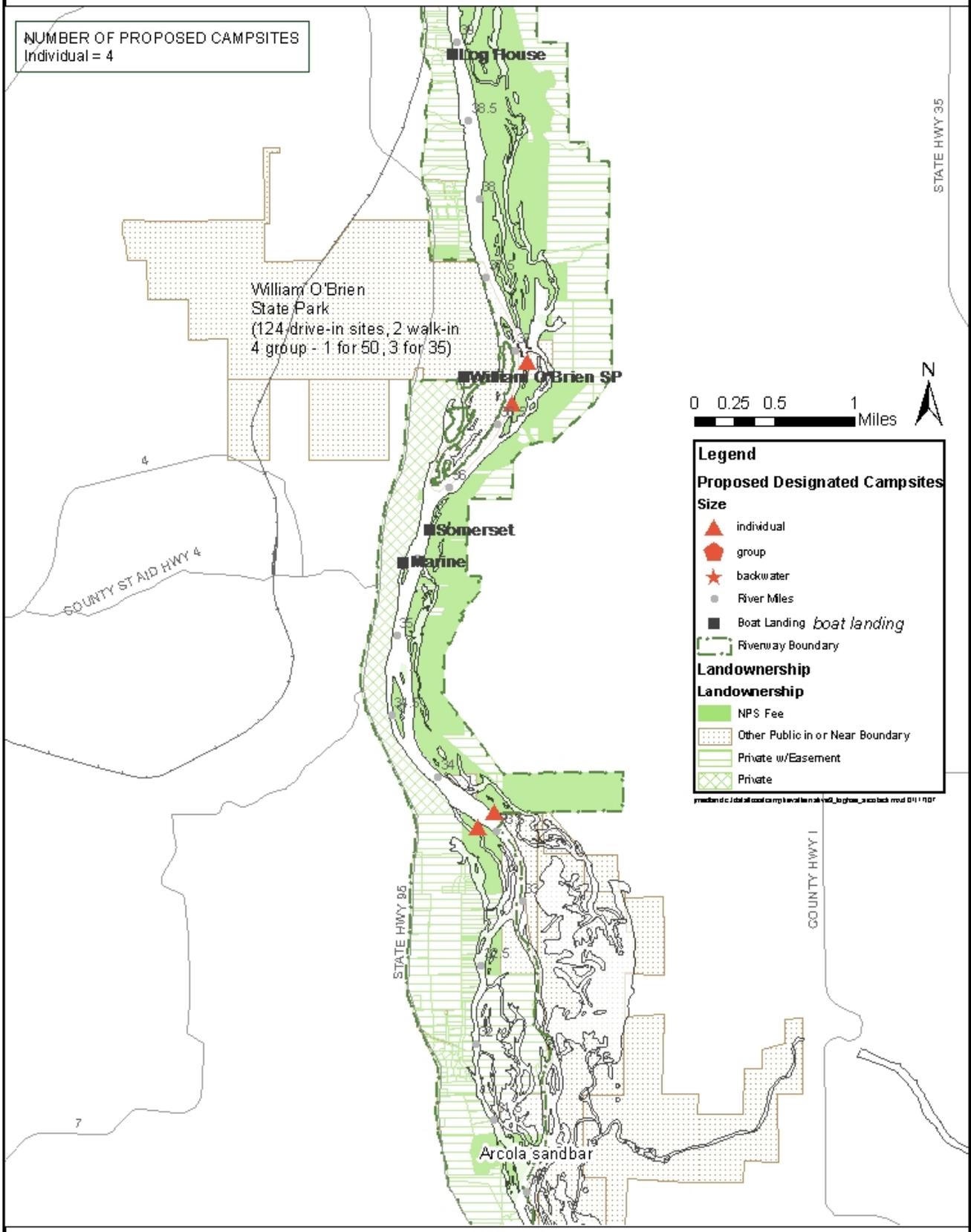


**APPENDIX A-3: MAP OF ALTERNATIVE 3a / 3b: DESIGNATED
CAMPSITES, DESIGNATED BACKWATER CAMPSITES, OVERNIGHT
BOAT TIE-UPS**



Alternative 3a / 3b: Designated Campsites, Designated Backwater Campsites Log House to Arcola sandbar

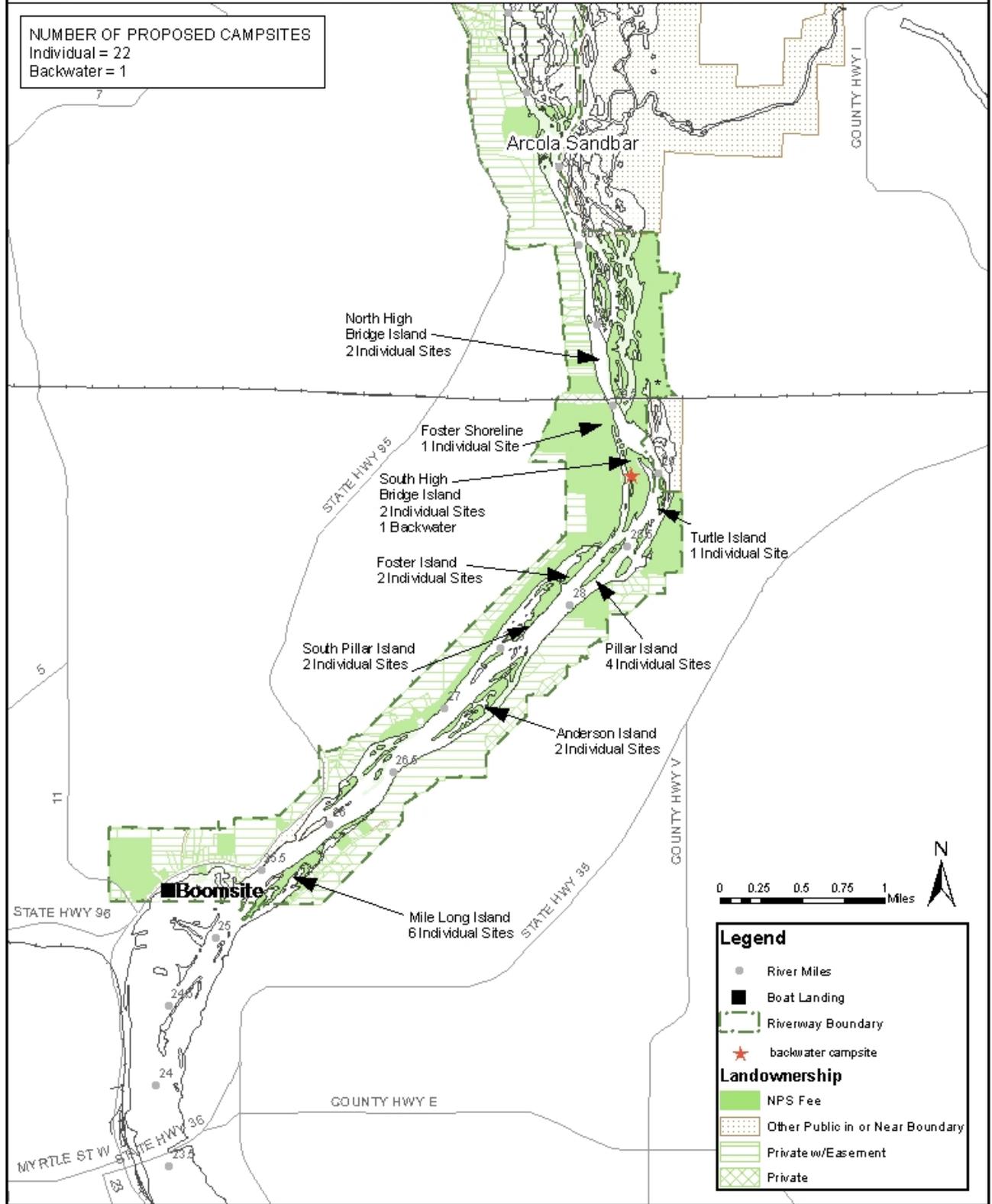
NUMBER OF PROPOSED CAMPSITES
Individual = 4





Alternative 3a / 3b: Designated Campsites, Designated Backwater Campsites Arcola sandbar to north Stillwater

NUMBER OF PROPOSED CAMPSITES
Individual = 22
Backwater = 1

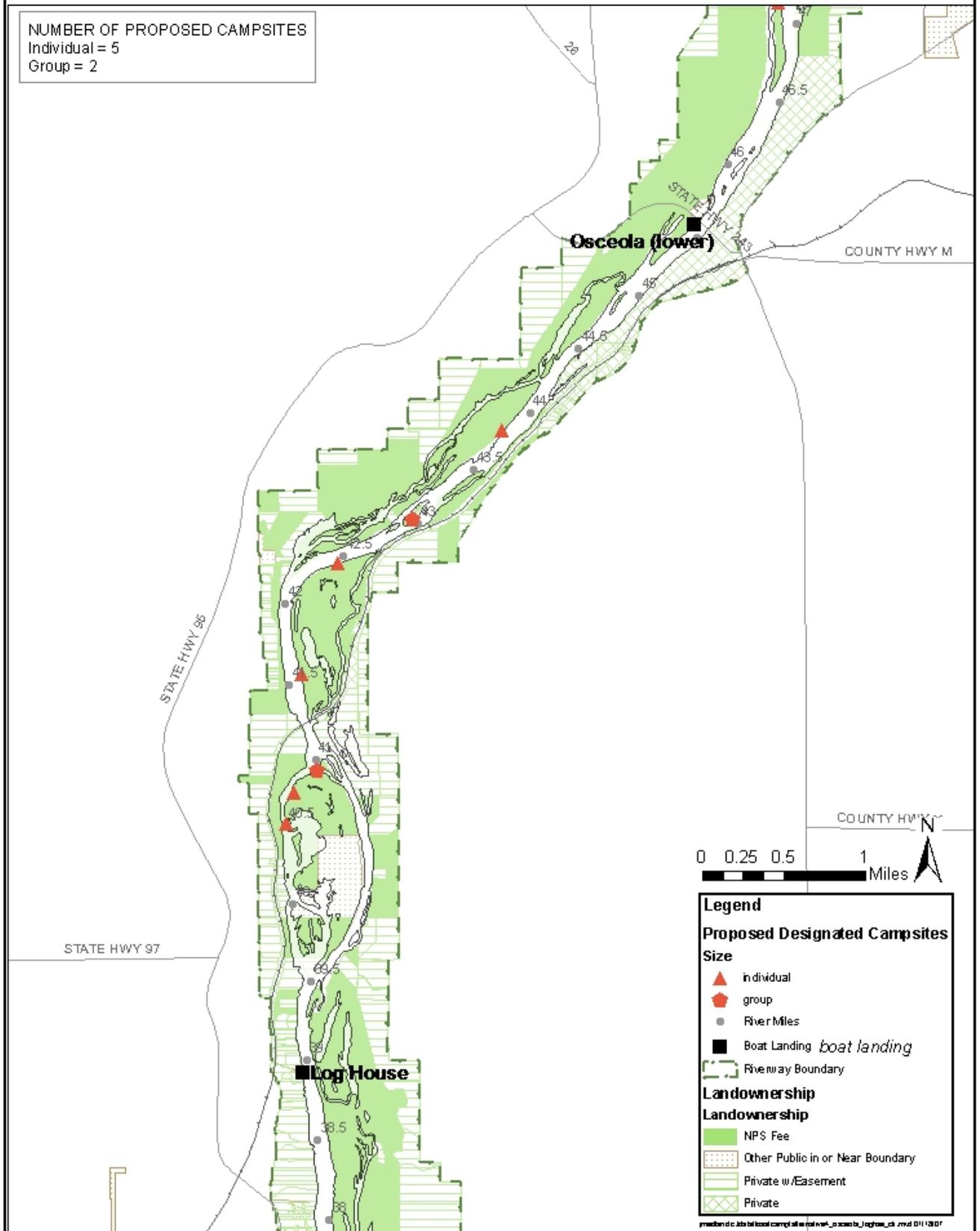


**APPENDIX A-4: MAPS OF ALTERNATIVE 4a / 4b: DESIGNATED
CAMPSITES ABOVE ARCOLA SANDBAR, OVERNIGHT BOAT TIE-UPS**



Alternative 4a / 4b: Designated Campsites above Arcola sandbar Osceola to Log House

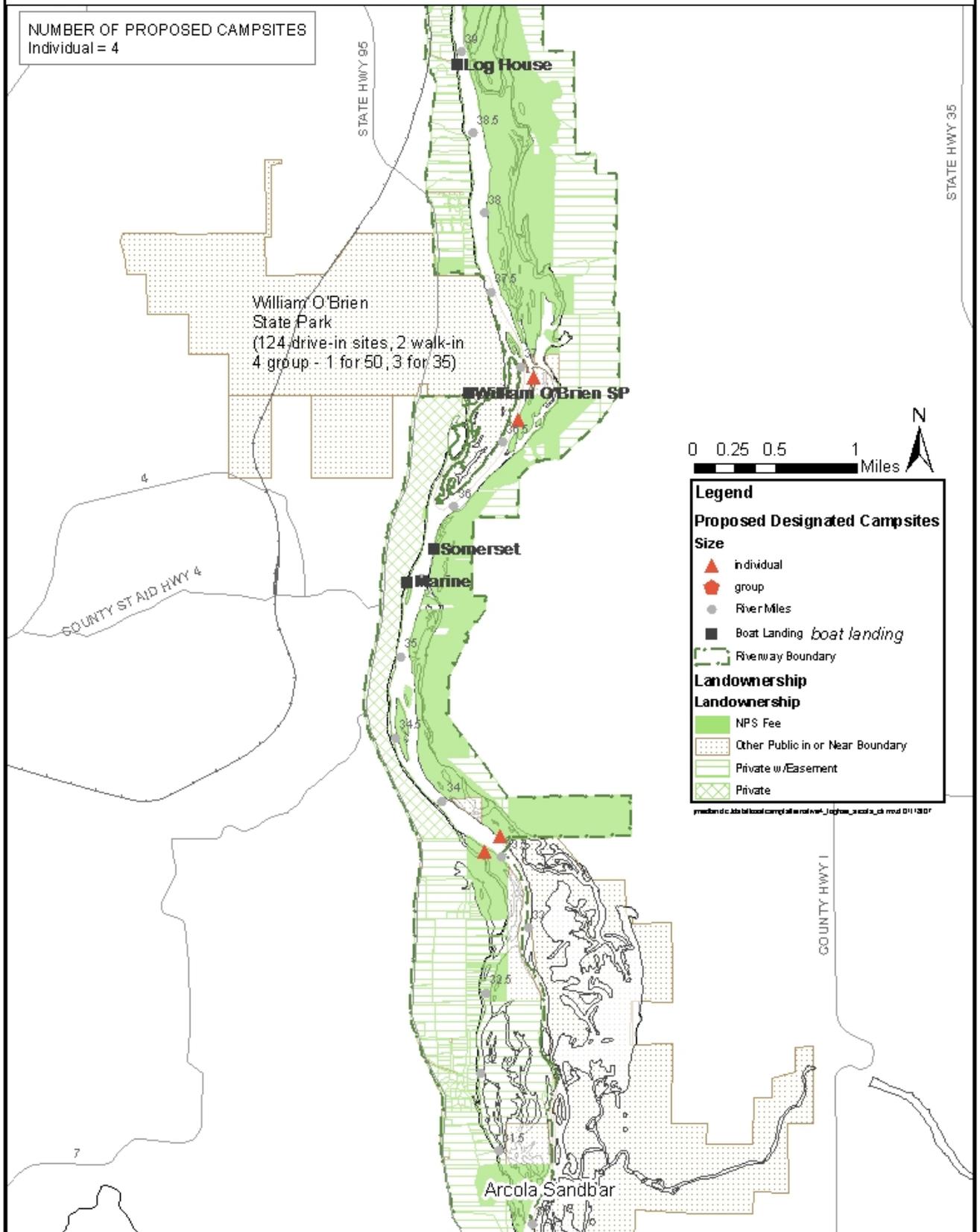
NUMBER OF PROPOSED CAMPSITES
Individual = 5
Group = 2





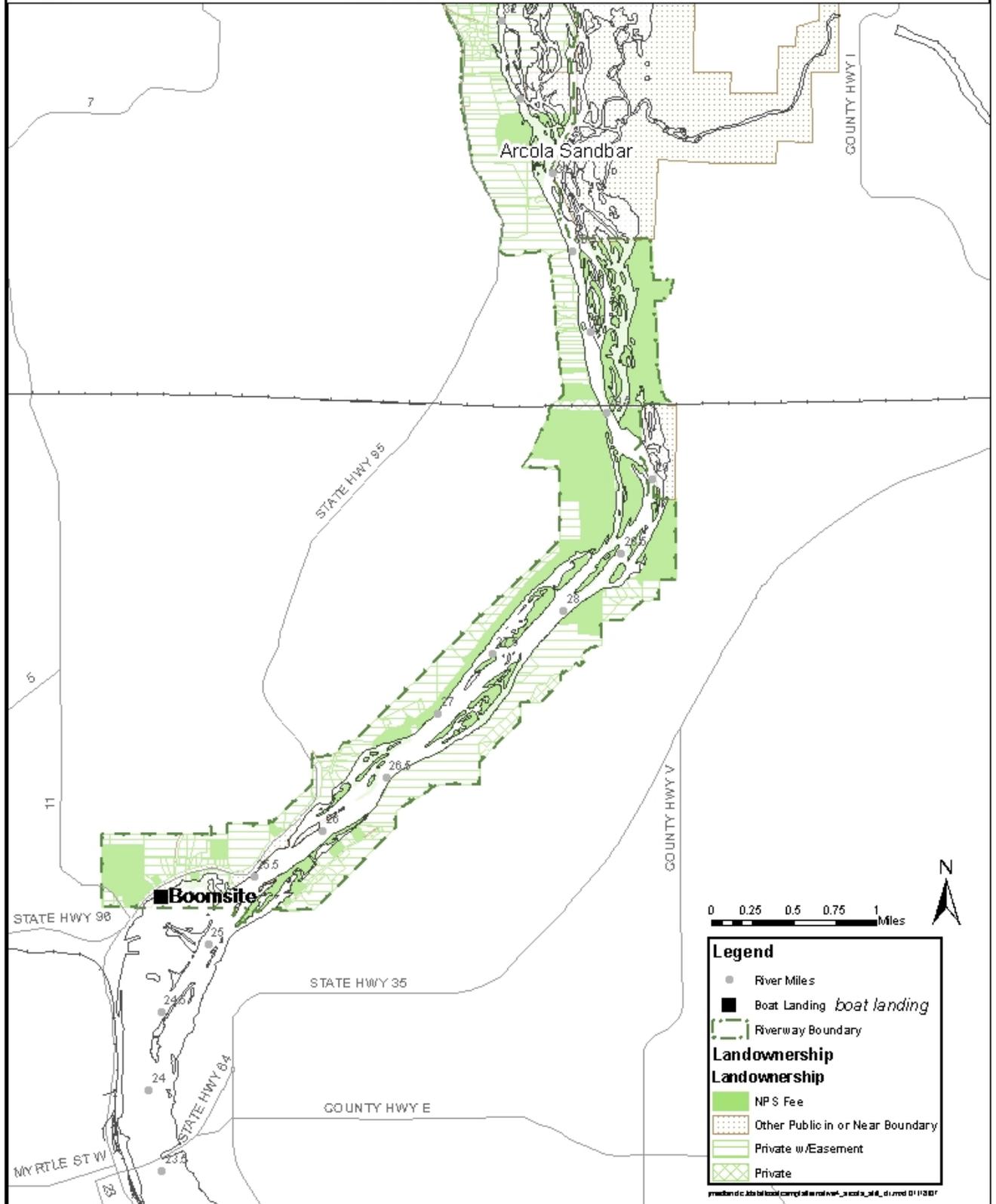
Alternative 4a / 4b: Designated Campsites above Arcola sandbar Log House to Arcola sandbar

NUMBER OF PROPOSED CAMPSITES
Individual = 4





Alternative 4a / 4b: Arcola sandbar to north Stillwater Overnight Boat Tie-ups Only



APPENDIX B: ROUGH COST ESTIMATES FOR ALTERNATIVES (in 2007 dollars) *

	Initial Set-up	Annual Toilet Pumping (Mile Long Island)	Annual Toilet Pumping (Eagles Nest)	Equipment Needs	Annual Maintenance Staff	Annual Resource Protection Staff	Annual Interpretive Staff	Annual Resource Management Staff	Total	Cost Recovery
Alt 1	---	\$15,000	\$1200	\$500	\$3000 (.25 FTE)	\$34,000 (1 FTE)	\$8,400 (0.5 FTE)	---	\$62,100	0%
Alt 2a	\$43,000	\$0	\$1200	\$39,500	\$18,000 (1.5 FTE)	\$68,000 (2 FTE)	\$16,800 (1 FTE)	\$6000 (.50 FTE)	\$192,500	0%
Alt 2b	Same as 2a	Same as 2a	Same as 2a	Same as 2a	Same as 2a	Same as 2a	\$25,500 (1.75 FTE)	Same as 2a	\$201,200	~20%
Alt 3a (PRF)	\$47,500	\$0	\$1200	\$39,500	\$18,000 (1.5 FTE)	\$68,000 (2 FTE)	\$16,800 (1 FTE)	\$6000 (.50 FTE)	\$197,000	0%
Alt 3b	Same as 3a	Same as 3a	Same as 3a	Same as 3a	Same as 3a	Same as 3a	\$25,500 (1.75 FTE)	Same as 3a	\$205,700	~20%
Alt 4a	\$22,000	\$0	\$1200	\$39,500	\$18,000 (1.5 FTE)	\$68,000 (2 FTE)	\$16,800 (1 FTE)	\$6000 (.50 FTE)	\$171,500	0%
Alt 4b	Same as 4a	Same as 4a	Same as 4a	Same as 4a	Same as 4a	Same as 4a	\$25,500 (1.75 FTE)	Same as 4a	\$180,200	~20%

*** SEE NEXT PAGE FOR ASSUMPTIONS**

The following assumptions were made in arriving at the cost estimates:

The estimates are conservative.

The estimates for the action alternatives include what is currently spent (under no action alternative) plus the additional needed to adequately implement the plan.

The estimates assume the plan is fully implemented and operational. Staff costs and time will likely be more during the first few years, when additional effort will be needed for education and enforcement.

Initial set-up costs are the costs for materials (signs, posts, fasteners, fire rings, anchors, and labor).

Equipment needs include a 4 x 4 pick-up and 26-foot pontoon boat with motor and trailer for maintenance of campsites.

Maintenance staff costs are for campsite maintenance

Resource Protection staff costs are for education and enforcement.

Interpretation staff costs are for education and managing the overnight use pass or permit/reservation system. They do not include the value of volunteer time is not included. Costs also do not include any software needs for the pass or permit / reservation system

Resource Management staff costs are for monitoring the condition of campsites.

If a permit or reservation system is warranted and adopted, the goal would be to return approximately 20% of the cost of collection to the Riverway to support the camping program. However, permit or reservation fees would be consistent with that charged for a similar camping experience in the area. It is not yet known whether these fees would be capable of producing a return 20%.

APPENDIX C: LISTED SPECIES OF THE ST. CROIX NATIONAL SCENIC RIVERWAY

SCIENTIFIC NAME:	COMMON NAME:	MN	WI
PLANTS			
<i>Asclepias ovalifolia</i>	Dwarf Milkweed		TH
<i>Allium cernuum</i>	Nodding Wild Onion		TH
<i>Anemone caroliniana</i>	Carolina Anemone		EN
<i>Aristida tuberculosa</i>	Sea-beach Needlegrass		SC
<i>Astragalus crassicaarpus</i>	Prairie Plum		EN
<i>Aureolaria pedicularia</i>	Fernleaf False Foxglove	TH	
<i>Baptisia alba</i>	White Wild Indigo	SC	
<i>Besseyia bullii</i>	Kitten-tails	TH	TH
<i>Calamovilfa longifolia</i>	Sand Reed		TH
<i>Calypso bulbosa</i>	Calypso Orchid		TH
<i>Carex annectens</i>	Yellow-fruited Sedge	SC	
<i>Carex prasina</i>	Drooping Sedge		TH
<i>Carex typhina</i>	Cattail Sedge	SC	
<i>Carex xerantica</i>	Dry Sedge	SC	
<i>Catabrosa aquatica</i>	Brook Grass		EN
<i>Dalea villosa</i>	Silky prairie clover		SC
<i>Desmodium illinoense</i>	Illinois Tick-trefoil	TH	
<i>Desmodium nudiflorum</i>	Stemless Tick-trefoil	SC	
<i>Drosera anglica</i>	English Sundew	SC	TH
<i>Dryopteris goldiana</i>	Goldie's Fern	SC	
<i>Echinochloa walteri</i>	Walter's Barnyard Grass	SC	
<i>Floerkea proserpinacoides</i>	False Mermaid	TH	
<i>Hydrocotyle americana</i>	American Water-pennywort	SC	
<i>Juglans cinerea</i>	Butternut	SC	
<i>Lechea tenuifolia</i>	Narrow-leaved Pinweed	EN	
<i>Liatris punctata</i> var. <i>nebraskana</i>	Dotted Blazing Star		EN
<i>Lonicera involucrata</i>	Fly Honeysuckle		EN
<i>Lysimachia quadrifolia</i>	Whorled Loosestrife	SC	
<i>Minuartia dawsonensis</i>	Rock Sandwort	SC	
<i>Myriophyllum farwellii</i>	Farewell's Water-milfoil	SC	
<i>Oenothera rhombipetala</i>	Rhombic-petaled Evening Primrose	SC	
<i>Opuntia fragilis</i>	Brittle Prickly-pear		TH
<i>Orchis rotundifolia</i>	Small Round-leaved Orchis		TH
<i>Panax quinquefolius</i>	Ginseng	SC	
<i>Parmelia stuppea</i>	Species of Lichen	SC	
<i>Paronychia fastigiata</i>	Forked Chickweed	EN	
<i>Pellaea atropurpurea</i>	Purple Cliff-brake	SC	
<i>Petasites sagittatus</i>	Sweet Coltsfoot		TH
<i>Poa paludigena</i>	Bog Bluegrass	TH	TH
<i>Polygala cruciata</i>	Cross-leaved Milkwort	EN	
<i>Polygonum arifolium</i> var. <i>pubescens</i>	Halberd-leaved Tearthumb	SC	
<i>Prenanthes aspera</i>	Rough White Lettuce		EN
<i>Ruellia humilis</i>	Toothcup, Wild Petunia	EN	EN
<i>Scutellaria parvula</i>	Small Skullcap		EN
<i>Solidago caesia</i>	Blue-stemmed Goldenrod		EN
SCIENTIFIC NAME:	COMMON NAME:	MN	WI
PLANTS			
<i>Solidago sciaphila</i>	Cliff Goldenrod	SC	

<i>Talinum rugospermum</i>	Prairie Fame-flower	EN	
<i>Tephrosia virginiana</i>	Goat's-rue	SC	
<i>Verbena simplex</i>	Narrow-leaved Vervain	SC	
<i>Waldsteinia fragarioides</i>	Barren Strawberry	SC	

MUSSELS

<i>Actinonaias ligamentina</i>	Mucket	TH	
<i>Alasmidonta marginata</i>	Elktoe	TH	
<i>Anodonta imbecillis</i>	Paper Pondshell		
<i>Cumberlandia monodonta</i>	Spectaclecase	TH	EN
<i>Cyclonaias tuberculata</i>	Purple Wartyback	TH	EN
<i>Ellipsaria lineolata</i>	Butterfly	TH	
<i>Elliptio crassidens crassidens</i>	Elephant-ear	EN	EN
<i>Elliptio dilatata</i>	Spike	SC	
<i>Epioblasma triquetra</i>	Snuffbox	TH	EN
<i>Fusconaia ebena</i>	Ebonysell	EN	EN
<i>Lampsilis higginsii</i>	Higgins eye	EN	EN
<i>Lasmigona compressa</i>	Creek Heelsplitter	SC	
<i>Lasmigona costata</i>	Fluted-shell	SC	
<i>Ligumia recta</i>	Black Sandshell	SC	
<i>Megalonaias nervosa</i>	Washboard	TH	
<i>Obovaria olivaria</i>	Hickorynut	SC	
<i>Plethobasus cyphus</i>	Bullhead		EN
<i>Pleurobema sintoxia</i>	Round Pigtoe		
<i>Quadrula fragosa</i>	Winged Mapleleaf	EN	EN
<i>Quadrula metanevra</i>	Monkeyface	TH	TH
<i>Simpsonaias ambigua</i>	Salamander Mussel	TH	TH
<i>Tritogonia verrucosa</i>	Pistolgrip, Buckhorn	TH	TH

BUTTERFLIES AND DRAGONFLIES

<i>Atrytonopsis hianna</i>	Dusted Skipper		SC
<i>Erynnis persius</i>	Persius Dusky Wing	EN	
<i>Hesperia ottoe</i>	Ottoe Skipper	TH	
<i>Incisalia irus</i>	Frosted Elfin		TH
<i>Lycaeides idas nabokovi</i>	Nabokov's Blue, Northern Blue	SC	EN
<i>Ophiogomphus anomalus</i>	Extra-striped Snaketail	SC	EN
<i>Ophiogomphus howei</i>	Pygmy Snaketail		TH
<i>Phyciodes batessi</i>	Tawny Crescent Spot		SC
<i>Speyeria idalia</i>	Regal Fritillary	SC	EN

FISH

<i>Acipenser fulvescens</i>	Lake Sturgeon	SC	RL
<i>Ammocrypta asprella</i>	Crystal Darter	SC	EN
<i>Coregonus artedii</i>	Lake Herring, Cisco		RL
<i>Cycleptus elongatus</i>	Blue Sucker	SC	TH
<i>Etheostoma microperca</i>	Least Darter	SC	
<i>Hiodon alosoides</i>	Goldeye		EN
<i>Hybopsis aestivalis</i>	Speckled Chub		TH
<i>Ictiobus niger</i>	Black Buffalo	SC	TH

SCIENTIFIC NAME:

COMMON NAME:

MN

WI

FISH

<i>Moxostoma carinatum</i>	River Redhorse		TH
<i>Moxostoma valenciennesi</i>	Greater Redhorse		TH
<i>Notropis amnis</i>	Pallid Shiner	SC	EN
<i>Notropis anogenus</i>	Pugnose Shiner 1928	SC	TH
<i>Opsopoeodus emiliae</i>	Pugnose Minnow	SC	
<i>Percina evides</i>	Gilt Darter	SC	TH

<i>Polyodon spathula</i>	Paddlefish	TH	TH
AMPHIBIANS AND REPTILES			
<i>Apalone mutica</i>	Smooth Softshell	SC	
<i>Chelydra serpentina</i>	Snapping Turtle	SC	
<i>Coluber constrictor</i>	Blue Racer	SC	
<i>Crotalus horridus</i>	Timber Rattlesnake	TH	
<i>Eumeces fasciatus</i>	Five-lined Skink	SC	
<i>Pituophis melanoleucus</i>	Gopher Snake, Bullsake	SC	
BIRDS			
<i>Accipiter cooperii</i>	Cooper's Hawk		RL
<i>Accipiter gentilis</i>	Northern Goshawk		
<i>Ammodramus henslowii</i>	Henslow's Sparrow	EN	TH
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	SC	
<i>Asio flammeus</i>	Short-eared Owl	SC	
<i>Buteo lineatus</i>	Red-shouldered Hawk	SC	TH
<i>Casmerodius albus</i>	Great Egret		TH
<i>Cygnus buccinator</i>	Trumpeter Swan	TH	EN
<i>Dendroica cerulea</i>	Cerulean Warbler	SC	TH
<i>Empidonax virescens</i>	Acadian Flycatcher	SC	TH
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	TH	EN
<i>Haliaeetus leucocephalus</i>	Bald Eagle	TH	SC
<i>Lanius ludovicianus</i>	Loggerhead shrike	TH	EN
<i>Larus pipixcan</i>	Franklin's Gull	SC	
<i>Oporornis formosus</i>	Kentucky Warbler		TH
<i>Pandion haliaetus</i>	Osprey		TH
<i>Pelecanus erythrorhynchus</i>	American White Pelican	SC	
<i>Podiceps auritus</i>	Horned Grebe	TH	
<i>Podiceps grisegena</i>	Red-necked Grebe		EN
<i>Seiurus motacilla</i>	Louisiana Waterthrush	SC	
<i>Sterna caspia</i>	Caspian Tern		EN
<i>Sterna forsteri</i>	Forster's Tern	SC	EN
<i>Sterna hirundo</i>	Common Tern	TH	EN
<i>Wilsonia citrina</i>	Hooded Warbler	SC	TH
MAMMALS			
<i>Myotis septentrionalis</i>	Northern Myotis	SC	
<i>Pipistrellus subflavus</i>	Eastern Pipistrelle	SC	

EN – Endangered

TH – Threatened

RL – RULE - Protected or regulated (by state legislation or policy)

NOTE: ADDITIONAL RARE, THREATENED, OR ENDANGERED SPECIES MAY OCCUR WITHIN THE BOUNDARIES OF THE RIVERWAY - HOWEVER, HARD DATA IS CURRENTLY LACKING TO CONFIRM SUCH SPECIES' PRESENCE

Information obtained from the Minnesota Natural Heritage Program (1995) and the Wisconsin Natural Heritage Program (1993 and 1995). The MN data included rare occurrences within the SACN and LOSA statutory boundaries, and the WI data included rare features for townships bordering SACN. Additional information obtained from the following reports:

Doolittle, C. J. 1988. Distribution and Relative Abundance of Freshwater Mussels in the Saint Croix National Scenic Riverway. Cable Natural History Museum Sigurd Olson Environmental Institute, Ashland, WI.

- Heath, D. J., and P. W. Rasmussen. 1990. Results of Base-Line Sampling of Freshwater Mussel Communities for Long-Term Monitoring of the Saint Croix National Scenic Riverway, Minnesota and Wisconsin. Prepared for USDI, NPS, St. Croix NSR, by WIDNR, Madison, WI.
- Judziewicz, Emmet J. 1994. FINAL REPORT: Inventory and Monitoring of Rare Vascular Plants, St. Croix National Scenic Riverway, Minnesota and Wisconsin. Department of Botany, University of Wisconsin, Madison, WI.
- Maercklein, R.A. and T. O'Halloran. 1999. A Checklist of Birds at St. Croix National Scenic Riverway. Unpublished document. National Park Service. St. Croix Falls, Wisconsin. 2pp.

APPENDIX D: FLOODPLAIN STATEMENT OF FINDINGS

STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT) AND DIRECTOR'S ORDER #77-2: FLOODPLAIN MANAGEMENT

Camping Management Plan Lower Saint Croix National Scenic Riverway

January 18, 2007

Recommended:

Superintendent, St. Croix National Scenic Riverway

Date

Certified for Technical Adequacy and Servicewide Consistency:

Bill Jackson, Chief, Water Resources Division

Date

Approved:

Regional Director

Date

A.1 Introduction

A.1.1 Brief Description of the Proposed Action

The National Park Service proposes a change in the way camping is managed on the Federally-administered portion of the Lower St. Croix National Scenic Riverway (Riverway). The Federally-administered portion of the Riverway is a narrow corridor that runs for 27 miles along the boundary of Minnesota and Wisconsin, from St. Croix Falls/Taylor Falls to north Stillwater. It borders the counties of Chisago and Washington in Minnesota and Polk and St. Croix counties in Wisconsin.

Designated campsites would be established at traditionally used areas along the main channel. Approximately 45 designated campsites would be established along 27 miles of river. Camping would be allowed in these designated campsites. Facilities at the designated campsites would include a sign and fire ring. Campers would be required to bring their own carry-in, carry-out toilets. All of the campsites are within the 100-year floodplain of the St. Croix River. In addition, the sites below Arcola sandbar (the last 6 miles of the 27 miles stretch) flood every spring (annually). Backwater camping may also be allowed in the backwaters, depending on the alternative ultimately selected.

Group size limits would be established for both individual and group size campsites. Up to 8 people would be allowed at individual sites and up to 16 people would be allowed at group campsites. Length-of-stay at designated main channel campsites would be 3 consecutive nights and 30 nights for the season (from May 15 to Sept 15).

Demand for designated campsites would be managed either through an overnight use pass (first-come, first serve) or through an advance allocation system (overnight permit or campsite reservation).

A.1.2 Brief Site Description

The St. Croix River is a 6th order stream in northwestern Wisconsin and eastern Minnesota. It originates in Upper St. Croix Lake near Solon Springs, Wisconsin at an elevation of 337 m (1,105 ft); it flows 250 miles southwest to its confluence with the Mississippi River at Prescott, Wisconsin, elevation 206 meters (675 ft). The portion of the St. Croix River covered by this plan lies within the last (downstream) 50 miles of river.

A.2 Justification for Use of Floodplain

A.2.1 Description of Why the Proposed Action Must Be Located in a Floodplain

Camping along the Riverway is at primitive canoe-in/boat-in campsites that are functionally dependent on their location adjacent to the water. There is no alternative to providing canoe-in/boat-in sites that would be located outside the 100-year floodplain.

A.2.2 Description of Site-specific Flood Risk

Recurrence interval of flooding at the site

As stated above, all of the proposed campsites are within the 100-year floodplain of the St. Croix River. In addition, the sites below Arcola sandbar (the last 5 miles of the 27 miles stretch) flood every spring.

Time required for flooding to occur (amount of warning possible)

Flooding on the St. Croix is seasonal and associated with spring snowmelt and spring rains. Spring flooding occurs before the onset of the recreation season, when visitation and camping pressure is light. When flooding occurs, the floodplain is inundated and campsites are not available for use. Flood waters slowly rise and slowly recede. While spring flooding does not typically displace campers, it can delay the onset of camping while visitors wait for flood waters to recede. Unexpected, flashy floods do not occur on the St. Croix.

A.3 Description of How Action Will Be Designed or Modified to Minimize the Following

A.3.1 Harm to Floodplain Natural Resources

The proposed primitive campsites would have negligible to minor impacts on natural resources of the floodplain as discussed in the environmental assessment to which this Statement of Finding is attached. No additional measures are needed to minimize impacts to floodplain natural resources.

A.3.2 Risk to Life and Property to the Regulatory Floodplain Level

Flooding on the St. Croix occurs before the onset of the recreation season. Flood waters slowly rise and slowly recede. Due to the predictable nature of flooding on the St. Croix, there is very little risk to life or property.

To minimize the slight risk that does exist, information distributed to visitors will inform them that the campsites are located within the 100-year floodplain, and, below Arcola sandbar, within the annual floodplain. If a permit or reservation system is put into place, no permits or reservations will be issued during periods of flooding.

A.4 Summary

The proposed primitive campsites are functionally dependent on a location adjacent to the water. There are no alternatives to locating them within the 100-year floodplain. Impacts to floodplain natural resources would be negligible to minor. Risk to human life and property would be slight. Information distributed to visitors regarding camping will inform them that all campsites are within the 100-year floodplain.

APPENDIX E: CROSS REFERENCE OF COMMON AND SCIENTIFIC NAMES FOR PLANTS AND ANIMALS

Shrubs

Alder

Alnus spp.

Trees

American elm

Ulmus americana

Ash

Fraxinus spp.

Basswood

Tilia americana

Black willow

Salix nigra

Cottonwood

Populus deltoides

Silver maple

Acer saccharinum

Slippery elm

Ulmus rubra

Mussels

Higgin's eye pearly mussel

Lampsilis higginsii

Winged mapleleaf mussel

Quadrula fragosa

Fish

Channel Catfish

Ictalurus punctatus

Northern pike

Esox masquinongy

Redhorse suckers

Moxostoma sp.

Smallmouth bass

Micropterus dolomieu

Walleye pike

Stizostedion vetreum

Reptiles and Amphibians

American toad

Bufo americanus

Blue-spotted salamander

Ambystoma laterale

Common map turtle

Graptemys geographica

Eastern garter snake

Thamnophis sirtalis sirtalis

Eastern spiny softshell

Trionyx spiniferus spiniferus

Green frogs

Hyla cinerea

Green snake

Opheodrys vernalis

Hognose snake

Heterodon platyrhinus

Snapping turtle

Chelydra serpentina

Spring peepers

Hyla crucifer

Birds

American kestrel

Falco sparverius

Bald eagle

Haliaeetus leucocephalus

Belted kingfisher

Megasceryle alcyon

Broad-winged hawk

Buteo platypterus

Canada goose

Branta canadensis

Common merganser

Mergus merganser

Cooper's hawk

Accipiter cooperi

Great blue heron

Ardea herodias

Green heron

Butorides virescens

Mallard

Anas platyrhynchos

Osprey

Pandion haliaetus

Red-shouldered hawk

Buteo lineatus

Red-tailed hawk

Buteo jamaicensis

Red-winged blackbird

Agelaius phoeniceus

Rough-legged hawk

Buteo lagopus

Ruffed grouse

Bonasa umbellus

Sharp-shinned hawk

Accipiter striatus

Sharp-tailed grouse
Tree swallow
Trumpeter swan
Turkey
Woodcock
Wood duck

Mammals

Badger
Beaver
Big brown bat
Black bear
Coyote
Deer mouse
Gray fox
Gray wolf
Gray squirrel
Little brown bat
Masked shrew
Meadow vole
Mink
Muskrat
Otter
Raccoon
Red fox
Red squirrel
Short-tail shrew
Skunk
Weasel
White-tailed deer
Woodchuck

Pedioecetes phasianellus
Iridoprocne bicolor
Cygnus buccinator
Meleagris gallopavo
Philohela minor
Aix sponsa

Taxidea taxus
Castor canadensis
Eptesicus fuscus
Ursus americanus
Canis latrans
Peromyscus maniculatus
Urocyon cinereoargenteus
Canis lupus
Sciurus carolinensis
Myotis lucifugus
Sorex cinereus
Microtus pennsylvanicus
Mustela vison
Ondatra zibethica
Lutra canadensis
Procyon lotor
Vulpes fulva
Tamiasciurus hudsonicus
Blarina brevicauda
Mephitis mephitis
Mustela frenata
Odocoileus virginianus
Marmota caligata

